

CCPS Science Unit Plan

Grade	5th	Subject	Science	Unit #	4
Unit Name	Unit 4: Cells and Microorganisms S5L3/S5L4		Timeline	5 weeks	
How to use the Framework	<p style="color: red;">This Framework should guide you in your instructional planning as you develop your daily and/or weekly lesson plans. The resources and instructional strategies reflected in the Framework will provide a foundation for fully developing your instructional design and implementation.</p> <p style="color: red;">Please see the hyperlinked abbreviation document to ensure understanding of all abbreviations used with this framework.</p> <p>CCPS Department of Science Website for access to all unit frameworks.</p>				
Unit Overview	<p>Background Information: At this level, students have difficulty with the idea that cells are the basic units in which life processes occur. In this unit students must understand that a cell (system) is a group of related parts that make up a whole and can carry out functions its individual parts cannot. Students will obtain, evaluate, and communicate information to observe the similarities and differences between an animal cell and a plant cell. Using a microscope, students will locate parts of cells responsible for these functions. Additionally, students will develop an understanding that some microorganisms are harmful and others are beneficial. This unit is not for classifying microorganisms. It builds on the third and fourth grade understandings of habitat and food chains (interdependent relationships.) This unit focuses on evidence of harmful and beneficial organisms in the ecosystem.</p> <p>Refer to Teacher Notes for additional instructional notes.</p> <p>Throughout this unit, students will be able to:</p> <ul style="list-style-type: none"> ● develop models to identify and label parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus). ● engage in arguments that plant and animal cells have parts that are too small to be seen without magnification. ● construct arguments using scientific evidence to support a claim that some microorganisms are beneficial and some are harmful. ● read and share facts and inferences from text. ● communicate through writing and speaking using the Claim-Evidence-Reasoning protocol <p>Throughout this unit, the teacher will:</p> <ul style="list-style-type: none"> ● provide students with opportunities to develop models to identify and label parts of plant and animal cells. ● support engaging arguments that plants and animals are comprised of cells that are too small to be seen without magnification. ● guide students to provide multiple examples of how microorganisms can be both beneficial and harmful to support a claim. ● establishing the protocol for reading and sharing text. ● explain how to communicate through writing and speaking using the Claim-Evidence-Reasoning protocol <p>Prerequisites <u>First Grade</u>- basic needs of plants and animals. a. Develop models to identify the parts of a plant -- root, stem, leaf, and flower. (S1L1) <u>Second Grade</u> - Life cycles of different living organisms. (S2L1a/c) <u>Third Grade</u> - Similarities and differences between plants, animals, and habitats found within geographic regions of Georgia. (S3L1a/b) Fourth Grade - Roles of organisms and the flow of energy within an ecosystem. S4L1a</p>				

Standards	GSE	Science and Engineering Practices	Crosscutting Concepts
	<p>S5L3. Obtain, evaluate, and communicate information to compare and contrast the parts of plant and animal cells.</p> <p>a. Gather evidence by utilizing technology tools to support a claim that plants and animals are comprised of cells too small to be seen without magnification.</p> <p>b. Develop a model to identify and label parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus).</p> <p>c. Construct an explanation that differentiates between the structure of plant and animal cells.</p> <p>S5L4. Obtain, evaluate, and communicate information about how microorganisms benefit or harm larger organisms. (Clarification statement: Possible microorganisms could include Tardigrades, Lactobacillus, Probiotics, Rotifers, Salmonella, Clostridium botulinum (Botox), E-coli, Algae, etc. Students are not expected to know these specific microorganisms. The list is provided to give teachers examples.)</p> <p>a. Construct an argument using scientific evidence to support a claim that some microorganisms are beneficial.</p> <p>b. Construct an argument using scientific evidence to support a claim that some microorganisms are harmful.</p>	<p>Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world.</p> <p>Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.</p> <p>Constructing explanations and designing solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.</p>	<p>Systems and system models. Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering.</p> <p>Scale, proportion, and quantity: In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system’s structure or performance.</p> <p>Structure and Function The way an object is shaped or structured determines many of its properties and functions..</p>
NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas		
The Phenomenon Protocol			
Anchoring Phenomena		Learning Targets	

Phenomenon Card S5L3a	Students will gather evidence by utilizing technology tools to support a claim that plants and animals are comprised of cells too small to be seen without magnification.
Phenomenon Card S5L3b	Students will develop a model to identify and label parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus).
Phenomenon Card S5L3c	Students will construct an explanation that differentiates between the structure of plant and animal cells.
Phenomenon Card S5L4a	Students will construct an argument using scientific evidence to support a claim that some microorganisms are beneficial.
Phenomenon Card S5L4b	Students will construct an argument using scientific evidence to support a claim that some microorganisms are harmful.

Weekly Lesson Tasks

Week 1				
GSE: S5L3a		Focused Concept: Microscopes		
Learning Target:	Students will gather evidence by utilizing technology tools to support a claim that plants and animals are comprised of cells too small to be seen without magnification.			
Lab Safety and Materials	General Safety Practices for Elementary Science Classroom-TOC.docx			
Phenomenon: Phenomenon Card S5L3a			DQ: How do microscopes assist with seeing plant and animal cells?	
Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
Phenomenon Introduction (5-7 minutes) Show students the phenomenon task card images Use the See-Think-Wonder	Introduce the Driving Question: (7-10 minutes) Have students review the driving question:	Graphic Organizer and Materials (2 - 3 minutes for students to access) Microscopes Reference Chart Virtual Microscope Link	Text Annotation Strategy (30-45 minutes) Have students read and annotate the following text: Introduction to Microscopes	Claim-Evidence-Reasoning (15-25 minutes) Students will write a response to the following driving question in the CER format.

protocol to guide student thinking.

Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.

Inquiry Activity (10-15 minutes)

•Teacher will utilize the engage lesson “[Is There More to Matter Than Meets the Eye?](#)”

Objective

In this activity, students will be introduced to the concept that all matter consists of parts that are too small to be seen without magnification.

Material

1 Magnifying glass/hand lens per group

8 pre-scripted index cards with the following words: *sandwich, scooter, chromebook, salad, bedroom, kitchen, house, automobile*

****TEACHER NOTE:**

This activity helps students understand that matter consists of small parts that cannot be seen with the eye alone. They are not expected to know the parts or structures of the animal and plant cell.

How do microscopes assist with seeing plant and animal cells?

Use the strategy to support students with making connections and understanding the driving question (DQ).

[Visualizing the Driving Question](#)

Click here to access [question words reference chart](#)

The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.

Be sure to create a reference for students to have throughout the week.

****TEACHER NOTE:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)

(10-12 minutes)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating

****TEACHER NOTE:**

The teacher will model how to navigate the virtual microscope website by reviewing the various tabs.

Students will use a virtual microscope prior to using a physical microscope. (*Become familiar with the virtual microscope prior to facilitating the task.*)

[Virtual Microscope Link](#)

Investigation Facilitation (25 - 35 minutes)

During the investigation, have students **engage in argument using evidence that plants and animals are comprised of cells too small to be seen without a microscope.**

Use the following protocol:

Have students follow the directions for learning to utilize a microscope properly.

View the reference guide and have students review the following components in group:

Click “Guide”
Then, **Overview**
Click **Objective Lenses**
Click **Microscope Care**
****REVIEW “Handling” ONLY review arm under the Terminology tab**

Allow each group to share out about one of the learned

The teacher should facilitate the following process. Have the students follow the text protocol facilitation directions provided in the following strategy:

3-5 Text Annotation Prot...

Students should complete the following student handout as they work through the text annotation protocol:

[3-5 Information Analysis Student Organizer \(editable\)](#)

3-5 Information Analysis...

During the teacher-led discussion, the teacher should ask the following questions:

Why is a microscope useful in observing plant and animal cells?

How does placing a specimen on a microscope slide affect its appearance?

What is the value in using the objective lenses?

****TEACHER NOTE:** Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy (10-15 minutes)

Vocabulary Words:
microscope
magnification

How do microscopes assist with seeing plant and animal cells?

Review the [claim-evidence-reasoning poster](#) with the students

****TEACHER NOTE:** Provide students with sentence starters by sharing on the board:

3-5 Claim-Evidence-Rea...

Have students write their claim-evidence-reasoning

[writing a claim](#)

Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.

[writing evidence](#)

Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

[writing the reasoning](#)

Students will use textual evidence from the “text annotation graphic organizer” to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)

the process of developing skills for effective argumentation.

The teacher should state the following to students:

“Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas.”

Review the [claim-evidence-reasoning poster](#) with students.

As a class or in student groups, provide students with this week’s claim- evidence-reasoning sample.

[Use the student sample linked here](#)

****TEACHER NOTE:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:

[Claim-Evidence-Reasoning](#)

concepts under the reference guide. Have students complete the [Microscopes Reference chart](#) as a reference tool.

Next, have students work through the learn tab to identify all parts of a microscope and what the parts are used for.

NOTE:** Have students locate the parts of the microscope from the [Learn labels on a physical microscope](#).

Practice with the microscope functions.

Click the “**Explore**” button at the bottom of the screen. Click the gray slides box that has a question mark hovering over it.

Have students click the gray box, and **choose sample slides. Click “letter e”**

Individually, have students bring the letter into focus.

Explore the various magnifications for the letter. Monitor and check student work.

The teacher should monitor student work, ask guiding questions, and work in small groups with any students that require additional assistance.

Vocabulary Strategy:

Four Square

Provide students with the [graphic organizer \(editable\)](#) or [pdf handout](#), explaining its four sections: word, meaning, picture, and sentence.

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words.

Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term.

Have students collaborate to complete the four square strategy for the other vocabulary terms.

Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics.

Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.

[3-5 Student Writing Template \(editable\)](#)

[3-5 Student Writing Template \(pdf\)](#)

****TEACHER NOTE:** Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students’ samples. Ask the following questions:

*How are your thoughts or understanding similar to another writer on the topic?
How are your thoughts or understanding different to another writer on the topic?
What would you like to learn more about? Why?*

**Assessment for Learning:
(10-15 minutes)**



**We will discuss this on
Monday June 24th**

Have students complete the following assessment.

(Download and create a pdf for printing and online editable document)

SAVVAS options:

- **Quest Check-IN**
- **Assessment and Remediation**
- **Evidence-Based Assessment**
- **Performance-Based Assessment:**

	<p>Record Observations Document (google doc)</p> <p> Claim-Evidence-Reasonin... (PDF)</p> <p><i>1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.</i></p> <p><i>2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.</i></p> <p><i>3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.</i></p> <p>Ask the following questions to students as they analyze the student samples:</p> <p> Claim-Evidence-Reasonin...</p> <p>**Teacher Note: As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.</p>			<p>uDemonstrate Lab</p> <p>Discovery Education</p> <ul style="list-style-type: none"> • View lesson # assessment • View Unit Assessment <p>Illuminate</p> <ul style="list-style-type: none"> • Create 3-5 question quiz based on science/engineering practices (3-5) (PAUSE: We will discuss)
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Week 2	
GSE: S5L4a, S5L4b Learning Targets	Focused Concept: Microorganisms
Lab Safety and Materials	General Safety Practices for Elementary Science Classroom-TOC.docx

Learning Targets		Students will construct an argument using scientific evidence to support a claim that some microorganisms are beneficial and some microorganisms are harmful.		
Phenomenon: Phenomenon Card S5L4a Phenomenon Card S5L4b Decomposition of multi-celled organisms by single-celled organisms		DQ: How do microorganisms affect humans?		
Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
<p>Phenomenon Introduction (5 - 7 minutes)</p> <p>Show students the S5L4 phenomenon card and embedded video</p> <p>Use the See-Think-Wonder protocol to guide student thinking.</p> <p>Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.</p> <p>Inquiry Activity (10 - 15 minutes)</p> <p>uInvestigate Lab found in Savvas: How Can Matter Change in an Ecosystem?</p> <p>Objective Students use a model to observe how matter from organisms becomes a part of the soil in the ecosystem.</p> <p>Material sealable plastic bags - 2 per group banana slices yeast soil spoons</p>	<p>Introduce the Driving Question: (7 - 10 minutes)</p> <p>Have students review the driving question:</p> <p><i>How do microorganisms affect humans?</i></p> <p>Use the strategy to support students with making connections and understanding the driving question (DQ).</p> <p>Visualizing the Driving Question</p> <p>Click here to access question words reference chart</p> <p>The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.</p> <p>Be sure to create a reference for students to have throughout the week.</p> <p>**TEACHER NOTE: Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or</p>	<p>Graphic Organizer and Materials (2 - 3 minutes for students to access)</p> <p>Microorganisms Research links Guide</p> <p>Microorganisms Research Graphic Organizer (editable)</p> <p>Microorganisms Researc...</p> <p>Chromebook/Internet Paper Coloring Pencils/markers</p> <p>Objective: Students will research microorganisms to construct an argument using scientific evidence to support a claim that some microorganisms are beneficial and some microorganisms are harmful.</p> <p>Investigation Facilitation (35 - 40 minutes)</p> <p>During the investigation, students construct an argument using scientific evidence from the investigation to support a claim that some microorganisms are beneficial and some</p>	<p>Text Annotation Strategy (30 - 45 minutes)</p> <p>Have students read and annotate the following text: from Savvas: Microorganisms.</p> <p>The students will read and annotate the sections for <i>Types of Microorganisms, Harmful Microorganisms, Beneficial Microorganisms, and Using Microorganisms</i></p> <p>The teacher should facilitate the following process. Have the students follow the text protocol facilitation directions provided in the following strategy:</p> <p>3-5 Text Annotation Prot...</p> <p>Students should complete the following student handout as they work through the text annotation protocol:</p> <p>3-5 Information Analysis Student Organizer (editable)</p> <p>3-5 Information Analysis...</p> <p>During the teacher-led discussion, the teacher should ask the following questions:</p> <p><i>How can microorganisms be beneficial to larger organisms?</i></p>	<p>Claim-Evidence-Reasoning (15 - 25 minutes)</p> <p>Students will write a response to the following driving question in the CER format.</p> <p><i>How do microorganisms affect humans?</i></p> <p>Review the claim-evidence-reasoning poster with the students</p> <p>**TEACHER NOTE: Provide students with sentence starters by sharing on the board:</p> <p>3-5 Claim-Evidence-Rea...</p> <p>Have students write their claim-evidence-reasoning</p> <p>writing a claim Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.</p> <p>writing evidence Students should provide observational or numerical data</p>

aprons or protective wear
plastic gloves
Have students make a prediction.

Ask:
How do bananas break down in soil?

Inquiry Preparation

Assign the lab to students in SAVVAS.

Cut the bananas in half-inch slices prior to the lab.

Each group will need 2 quart size sealable bags.

Pour soil into each quart size bag until half full.

label one small container with ½ teaspoon of yeast for each group.

Inquiry Facilitation

Using the bags that are already ½ full of soil, have the students to follow the directions below:

Add the same amount of bananas to each bag

Add the ½ teaspoon of yeast to one of the bags and label it.

Fill the bags the rest of the way with more soil and close the bags.

Observe and record what happens using the Observation section of the lab sheet.

video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)

(10 - 12 minutes)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

“Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas.”

Review the [claim-evidence-reasoning poster](#) with students.

As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

[Use student sample linked here](#)

****TEACHER NOTE:** Students should not answer the driving question at this time. Students will need to collect information,

microorganisms are harmful.

Use the following protocol:

Assign the uInvestigate Lab,

 uInvestigate Lab: Is a mi...

 Microorganisms Research

or

 uInvestigate_Is a microor...

from Savvas to students.

Assign each group at least one microorganism to research.

Students will work in their assigned groups to research their given microorganism in order to debate whether it is helpful or harmful.

Instruct students to record their information on their [graphic organizer](#).

Allow students to create a visual aid (poster or single google slide and script) to compare and contrast harmful and beneficial microorganisms.

Have students present their group's researched microorganisms. Other students should record information provided during each presentation.

After each group presents, facilitate a debate among the students in the class about whether the microorganism was helpful, harmful, or possibly both.

How can microorganisms be harmful to larger organisms?

What is the benefit of having microorganisms in our soil?

****TEACHER NOTE:** Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy (10 - 15 minutes)

Vocabulary Words:

microorganism
bacteria
virus
fungi
beneficial
harmful

Provide students with the [graphic organizer \(editable\)](#) or [pdf handout](#), explaining its sections: word, antonym, synonym, picture, *in my own words* (meaning), and sentence

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. The teacher should provide and post the meaning of the word for students to refer to.

Allow students to work in collaborative groups to discuss an antonym and a synonym. The group should draw or provide/insert an image of the

as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning

Students will use textual evidence from the “text annotation graphic organizer” to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)

[3-5 Student Writing Template \(editable\)](#)

[3-5 Student Writing Template \(pdf\)](#)

****TEACHER NOTE:** Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions:

*How are your thoughts or understanding similar to another writer on the topic?
How are your thoughts or understanding different to another writer on the topic?
What would you like to learn more about? Why?*

Assessment for Learning:
(10 - 15 minutes)

We will discuss this on Monday June 24th

****TEACHER NOTE:**

Start the class with the inquiry activity to allow time for the bananas to break down. Students should observe that the yeast caused the bananas to break down faster than in the bags without yeast. Yeast acts as a microscopic decomposer and is helpful. This will help students to begin making a connection to the standard.

data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:

[Claim-Evidence-Reasoning Record Observations Document](#)
(google doc)

[Claim-Evidence-Reasoni...](#)
(PDF)

1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.

2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.

3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.

Ask the following questions to students as they analyze the student samples:

[Claim-Evidence-Reasoni...](#)

Have students take notes from the other groups and record how each of the microorganisms are beneficial, harmful or both.

word based on their understanding, write the provided meaning in their own words and write a sentence using the vocabulary word.

Have students collaborate, in groups, to complete the strategy for the other vocabulary terms.

Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.

Have students complete the following assessment.

(Download and create a pdf for printing and online editable document)

SAVVAS options:

- **Quest Check-IN**
- **Assessment and Remediation**
- **Evidence-Based Assessment**
- **Performance-Based Assessment:**
uDemonstrate Lab

Discovery Education

- **View lesson # assessment**
- **View Unit Assessment**

Illuminate

- **Create 3-5 question quiz based on science/engineering practices (3-5) (PAUSE: We will discuss)**

****TEACHER NOTE:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.

Week 3

GSE: S5L3b

Focused Concept: Plant and Animal Cells

Learning Target

Students will develop a model to identify and label parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus).

Lab Safety

[General Safety Practices for Elementary Science Classroom-TOC.docx](#)

Phenomenon: [Phenomenon Card S5L3b](#) [S5L3c](#)

DQ: Why does our skin bend when touched and tree bark doesn't move when touched?

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
<p>Phenomenon Introduction (5 -7 minutes)</p> <p>Show students the phenomenon task cards images</p> <p>S5L3c</p> <p>Use the See-Think-Wonder protocol to guide student thinking.</p> <p>Based on the guiding question, ask students to generate claims for the driving question:</p>	<p>Introduce the Driving Question: (7 - 10 minutes)</p> <p>Have students review the driving question:</p> <p>Why does our skin bend when touched and tree bark doesn't move when touched?</p> <p>Use the strategy to support students with making connections and understanding the driving question (DQ).</p> <p>Visualizing the Driving Question</p>	<p>Graphic Organizer and Materials (2 - 3 minutes for students to access)</p> <p>Microscope Activity Graphic Organizer</p> <p>■ Animal and Plant Cell.pdf</p> <p>Materials Use premade microscope slides provided in the STEMscopes lab kit (5th grade)</p> <p>**TEACHER NOTE:</p>	<p>Text Annotation Strategy (30 - 45 minutes)</p> <p>Have students read and annotate the following text: Cells as Building Blocks of Life</p> <p>The teacher should facilitate the following process. Have the students follow the text protocol facilitation directions provided in the following strategy:</p> <p>■ 3-5 Text Annotation Prot...</p> <p>Students should complete the following student handout as</p>	<p>Claim-Evidence-Reasoning (15 - 25 minutes)</p> <p>Students will write a response to the following driving question in the CER format.</p> <p><i>Why does our skin bend when touched and tree bark doesn't move when touched?</i></p> <p>Review the claim-evidence-reasoning poster with the students</p> <p>**TEACHER NOTE: Provide students with sentence starters by sharing on the board:</p>

Why does our skin bend when touched and tree bark doesn't move when touched?

Have students review their initial ideas about cells.

Ask students to consider answering any initial questions developed.

Inquiry Activity (10 - 15 minutes)

How Can a Plant Stand Without a Skeleton?

Objective

Students will gather evidence that plants consist of parts that are too small to be seen without magnification.

Material

[Image of large tree](#)
[Inquiry Activity Presentation](#)

****TEACHER NOTE:**

Keep in mind this activity is geared to having students begin developing their understanding of the different parts/organelles that are found in plants that enable them to survive. They are not expected to know what the organelles are.

Procedure

Show students the image of the [large tree](#) from GaDOE.

Click on the [Inquiry Activity Presentation](#).

Click here to access [question words reference chart](#)

The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.

Be sure to create a reference for students to have throughout the week.

****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

“Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in

If you are unable to locate, there is a process for extracting DNA to create a slide for the microscope. Reach out to your department chair to ask the department for support.
Microscopes
Microscope slides, covers
Vegetables
Q Tips for cheek cells
Paper, drawing tools of the teacher's choice
Craft materials, clay, etc.
(STEMscopes kit/in brown box)

The teacher will engage students in tool talk by providing an overview of the materials that will be utilized during the explore stage of the lesson as well as lab safety.

Students should apply their knowledge of microscopes to a physical microscope.

NOTEHowever, if only a limited amount is available, be sure to allow some groups to use the virtual microscope until they are able to view cells under the microscope.**

Preparation:

For each lab station, have one microscope and two pre-made slides.

Make sure the slides are only labeled 1 and 2 are not labeled with the names of the specimen found on the slides.

Do not have the names of the organisms listed.

they work through the text annotation protocol:

[3-5 Information Analysis Student Organizer \(editable\)](#)

■ 3-5 Information Analysis...

During the teacher-led discussion, the teacher should ask the following questions:

When viewing a plant cell under a microscope, what organelles/parts would be visible that are NOT visible in the animal cell?

Why does a plant cell need a cell wall?

What is the function of the nucleus?

****TEACHER NOTE:** Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Students may not be able to distinguish the cell wall and chloroplast under the microscope; however, they will have practice in identifying these parts in the next two weeks.

Vocabulary Strategy
(10 - 15 minutes)

Vocabulary Words:
plant cell
animal cell
cell membrane

■ 3-5 Claim-Evidence-Rea...

Have students write their claim-evidence-reasoning

writing a claim

Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.

writing evidence

Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning

Students will use textual evidence from the “text annotation graphic organizer” to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)

[3-5 Student Writing Template \(editable\)](#)

[3-5 Student Writing Template \(pdf\)](#)

****TEACHER NOTE:** Have students review the student sample(s) of claim-evidence-reasoning on

Guide students in a Think-Pair-Share activity using the following slide 2.

Ask:

How would you describe this plant?

How is the plant able to stand?

What enables you to stand?

Have students participate in the Think-Pair-Share. (3 minutes)

Show slide 3

Ask:

What do you notice?

Now, what do you think? How is a plant able to stand?

Show slide 4

Independently, have students construct an explanation supported by evidence that plants are made of cells too small to be seen without magnification that enable them to stand.

science investigations and science ideas.”

Review the [claim-evidence-reasoning poster](#) with students.

As a class or in student groups, provide students with this week’s claim-evidence-reasoning sample.

The teacher will pull students samples from earlier in the unit for peer review. Be sure to hide student names.

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:

[Claim-Evidence-Reasoning Record Observations Document](#) (google doc)

■ Claim-Evidence-Reasoni... (PDF)

1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.

2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.

3. Identify the student's reasoning in the sample and have the teacher or students write their observations or

NOTEStudents should not know which cell type they are observing at this time.**

Depending on what slides are available, create a key for the two slides and keep it for your reference only until you reveal them at the end of the investigation.

****TEACHER NOTE**

Students may not be able to distinguish the cell wall and chloroplast under the microscope; however, they will have practice in identifying these parts in the next two weeks.

Investigation Facilitation (30 - 40 minutes)

During the investigation, have students develop models of plant and animal cells and represent the various organelles found in each cell based upon the investigation.

Use the following protocol: Instruct students to use the microscope to look at each slide and sketch what they see in their [graphic organizer](#). Have students view the plant and animal cells under the physical microscope and the virtual microscope. **NOTE**:** **Students will compare after viewing under the physical microscope.**

After all students get a chance to observe the slides, have them

cytoplasm
nucleus
chloroplast
cell wall

Vocabulary Strategy:

Four Square

Provide students with the [graphic organizer \(editable\)](#) or [pdf handout](#), explaining its four sections: word, meaning, picture, and sentence.

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words.

Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term.

Have students collaborate to complete the four square strategy for the other vocabulary terms.

Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics.

Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.

Day 2. Have students compare their writing to those students' samples. Ask the following questions:

How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?

Assessment for Learning: S5L3a & b Quiz

questions.

Ask the following questions to students as they analyze the student samples:

■ Claim-Evidence-Reasoni...

****Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.

fill out the charts drawing their observations and describing the similarities and differences between what they saw on each of the slides.

Ask students, “What differences do you see between the slides?”
Record the responses from students.

Provide students the diagrams shown in the following images:
 ■ Animal and Plant Cell.pdf
 This consists of images of a plant and animal cell. Have students determine the parts they viewed under the microscope.

The parts provided on the diagrams above are the only parts that students study in fifth grade.

The teacher should monitor student work, ask guiding questions, and work in small groups with any students that require additional assistance.

Week 4

GSE: S5L3b		Focused Concept: Plant and animal cells	
Phenomenon: S5L3b		DQ: What are the similarities and differences between the parts and functions of the plant and animal cells?	
Learning Target	Students will develop a model to identify and label parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus).		
Lab Safety	General Safety Practices for Elementary Science Classroom-TOC.docx		

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
<p>Phenomenon Introduction (5 - 7 minutes) Show students the phenomenon task card images</p> <p>Use the See-Think-Wonder protocol to guide student thinking.</p> <p>Based on the guiding question, ask students to generate claims for “How do microscopes assist with seeing plant and animal cells?”</p> <p>Have students review their initial ideas about cells.</p> <p>Ask students to consider answering any initial questions developed.</p> <p>Inquiry Activity (25 - 30 minutes) What Do Plant and Animal Cells Need to Function?</p> <p>Objective Students will create a graphic organizer within their groups on their desks to sort the structures/organelles that specifically belong to the animal and plant cells. Students will also use a note card to write the function of each organelle.</p> <p>Materials Pre Cut labels: Animal Cell, Plant Cell, Function for the</p>	<p>Introduce the Driving Question: (7 - 10 minutes)</p> <p>Have students review the driving question:</p> <p><i>What are the similarities and differences between the parts and functions of the plant and animal cells?</i></p> <p>Use the strategy to support students with making connections and understanding the driving question (DQ).</p> <p>Visualizing the Driving Question</p> <p>Click here to access question words reference chart</p> <p>The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.</p> <p>Be sure to create a reference for students to have throughout the week.</p> <p>**Teacher Note: Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.</p>	<p>Graphic Organizers and Materials (2 - 3 minutes for students to access)</p> <p>Cells Model Review pdf Cells Model Review Electronic</p> <p>Clay toothpicks sticky notes/post it notes</p> <p>Investigation Facilitation (35 - 40 minutes)</p> <p>Activity 1: Review Task Have students work in groups to complete the question for Cells Model Review pdf Cells Model Review Electronic</p> <p>Have a brief discussion about the students’ answers and observations.</p> <p>Activity 2: Develop a Model</p> <p>Objective: Have students create 3D models of cells and label function and parts (organelles)</p> <p>During the investigation, have students develop models of plant and animal cells, label the various organelles found in each cell and their functions based upon evidence from the investigation.</p> <p>Link protocol here</p>	<p>Text Annotation Strategy (30 - 45 minutes)</p> <p>Have students read and annotate the following text:</p> <p>Cells as Building Blocks of Life</p> <p>The teacher should facilitate the following process. Have the students follow the text protocol facilitation directions provided in the following strategy:</p> <p>3-5 Text Annotation Prot...</p> <p>Students should complete the following student handout as they work through the text annotation protocol:</p> <p>3-5 Information Analysis Student Organizer (editable) 3-5 Information Analysis...</p> <p>During the teacher-led discussion, the teacher should ask the following questions:</p> <p><i>What is the difference between a cell membrane and a cell wall?</i></p> <p><i>Describe the structures found in both the animal and plant cells?</i></p> <p><i>How is a cell wall different from the other organelles? (cell wall is outside of the cell; the others are inside)</i></p> <p>Develop more questions with... Why...</p>	<p>Claim-Evidence-Reasoning (15 - 25 minutes)</p> <p>Students will write a response to the following driving question in the CER format.</p> <p><i>What are the similarities and differences between the parts and functions of the plant and animal cells?</i></p> <p>Review the claim-evidence-reasoning poster with the students</p> <p>**TEACHER NOTE: Provide students with sentence starters by sharing on the board:</p> <p>3-5 Claim-Evidence-Rea...</p> <p>Have students write their claim-evidence-reasoning</p> <p>writing a claim Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.</p> <p>writing evidence Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of</p>

[graphic organizer](#)
or [provide the editable document for students use](#)

- Cell Structure GIZMOS.pdf
- Cell Structure GIZMOS

Pre-cut organelles (extra organelles are provided to help assess students' thinking at this point.

Notecards/index cards (10 per group)

Zip lock bags to hold organelles, labels, and index cards

Activity Procedure

Have students use the following [GIZMO](#) to gather information for students to label and provide functions for the parts of the cell. Have students complete the accompanying graphic organizers

- Cell Structure GIZMOS.pdf
- Cell Structure GIZMOS

Following the GIZMO task, provide each group with a zip lock bag that contains the following labels for the graphic organizer: (1) Plant Cell Organelles, (1) Animal Cell Organelles, (2) Organelle Functions, chart paper and drawing utensils

Have students use the part pieces to sort the organelles as belonging to the animal or plant cell and the function. The students should develop a model

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER) (10 - 12 minutes)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

“Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas.”

Review the [claim-evidence-reasoning poster](#) with students.

As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

[The teacher will pull students samples from earlier in the unit for peer review. Be sure to hide student names.](#)

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to

Have students work in groups to discuss their understanding of the previous lesson.

The teacher will engage students in tool talk by providing an overview of the materials that will be utilized during the exploration stage of the lesson as well as lab safety.

Make available the clay, toothpicks, other craft materials and sticky notes so that students may proceed through the activity.

Have students develop a model based on the parts presented in the day 1 inquiry activity.

Students should have an opportunity to build and label 3-D models of a cell.

TEACHER'S CHOICE**
Students can build both models or one of the models. The teacher needs to identify what models students will construct.

What is the function of the structure? How does its structure support the function?

NOTE** When referring to structure, you are referring to the organelle or part of the plant.

Allow students time to complete their model. Give this about 15 to 20 minutes for completion.

After students have developed

How...

****TEACHER NOTE:** Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning. Have students answer the following questions:

The teacher should monitor student work, ask guiding questions, and work in small groups with any students that require additional assistance.

Vocabulary Strategy (10 - 15 minutes)

Vocabulary Words:

organelles
cell wall
chloroplast
plant cell

Vocabulary Strategy: Four Square

Provide students with the [graphic organizer \(editable\)](#) or [pdf handout](#), explaining its four sections: word, meaning, picture, and sentence.

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words.

Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review

the data they provide to support their claim.

[writing the reasoning](#)

Students will use textual evidence from the “text annotation graphic organizer” to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)

[3-5 Student Writing Template \(editable\)](#)
[3-5 Student Writing Template \(pdf\)](#)

****TEACHER NOTE:** Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions:

How are your thoughts or understanding similar to another writer on the topic?

How are your thoughts or understanding different to another writer on the topic?

What would you like to learn more about? Why?

(drawing) of their understanding of a plant and animal cell. Have students use the parts to label their models

Or

have students use their knowledge to complete this [graphic organizer](#)

NOTE**(This may not be accurate. Allow students to show you what they know at this time.)

Walk around the room to monitor students progress of the task and provide feedback. Students should have learned about the organelles in Week 3.

****TEACHER NOTE**

Print the graphic organizer parts on cardstock and laminate for later usage.

complete the following analysis protocol:

[Claim-Evidence-Reasoning Record Observations Document](#) (google doc)

■ Claim-Evidence-Reasoni... (PDF)

1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.

2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.

3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.

Ask the following questions to students as they analyze the student samples:

■ Claim-Evidence-Reasoni...

****Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.

their model, provide time for a gallery walk.

Gallery walks are conducted by allowing students to observe other students' work and develop questions.

Students should have post-it-notes to leave comments and questions by the cell models they observe.

various artifacts (pictures, images, primary sources, charts) to build knowledge of the term.

Have students collaborate to complete the four square strategy for the other vocabulary terms.

Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics.

Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.

Week 5

GSE: S5L3b,c

Focused Concept: Plant and Animal Cells

Learning Targets:

Students will construct an explanation that differentiates between the structure of plant and animal cells.

Lab Safety and Materials:

[General Safety Practices for Elementary Science Classroom-TOC.docx](#)

Phenomenon: [S5L3b](#)

DQ: How can we differentiate between the structure of plant and animal cells?

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
<p>Phenomenon Introduction (5 - 7 minutes) Show students the phenomenon task card images</p> <p>Use the See-Think-Wonder protocol to guide student thinking.</p> <p>Based on the guiding question, ask students to generate claims for</p> <p><i>How can we differentiate between the structure of plant and animal cells?</i></p> <p>Have students review their initial ideas about cells.</p> <p>Ask students to consider answering any initial questions developed.</p> <p>Inquiry Activity (10 -15 minutes)</p> <p>Show students the linked presentation of a cheetah and cactus.</p> <p>Have students conduct a Think-Pair-Share to construct an</p>	<p>Introduce the Driving Question: (7 - 10 minutes)</p> <p>Have students review the driving question:</p> <p><i>How can we differentiate between the structure of plant and animal cells?</i></p> <p>Use the strategy to support students with making connections and understanding the driving question (DQ).</p> <p>Visualizing the Driving Question</p> <p>Click here to access question words reference chart</p> <p>The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.</p> <p>Be sure to create a reference for students to have throughout the week.</p> <p>**TEACHER NOTE Students</p>	<p>Graphic Organizer and Materials (2 - 3 minutes for students to access)</p> <p>☐ Cells Analogy Task 📄 Cells Analogy Task.pdf Cell Analogy Rubric</p> <p>Investigation Facilitation (35 - 40 minutes) During the investigation, have students develop models of plant and animal cells and represent the various organelles found in each cell based upon the investigation .</p> <p>The teacher will model how students can create analogies to identify parts and functions to clarify student thinking.</p> <p>☐ Cells Analogy Task 📄 Cells Analogy Task.pdf</p> <p>Teachers should ask the following question.</p> <p>“How are the parts represented</p>	<p>Text Annotation Strategy (30 - 45 minutes)</p> <p>Have students read and annotate the following text:</p> <p>Lesson 7 Grade 5 Cells in Savvas. Students should only read the sections for Animal Cells and Plant Cells</p> <p>The teacher should facilitate the following process. Have the students follow the text protocol facilitation directions provided in the following strategy:</p> <p>📄 3-5 Text Annotation Prot...</p> <p>Students should complete the following student handout as they work through the text annotation protocol:</p> <p>3-5 Information Analysis Student Organizer (editable) 📄 3-5 Information Analysis...</p> <p>Have students view the following video: Cells Informational Video.MOV</p>	<p>Claim-Evidence-Reasoning (15 -25 minutes)</p> <p>Students will write a response to the following driving question in the CER format.</p> <p><i>How can we differentiate between the structure of plant and animal cells?</i></p> <p>Review the claim-evidence-reasoning poster with the students</p> <p>**TEACHER NOTE: Provide students with sentence starters by sharing on the board:</p> <p>📄 3-5 Claim-Evidence-Rea...</p> <p>Have students write their claim-evidence-reasoning</p> <p>writing a claim Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information</p>

explanation that differentiates the cells found in the cheetah and those that are found in the cactus.

Have students compare the two organisms.

Discuss what each organism (cheetah and cactus) would look like under a microscope, draw what they would look like under the microscope, and construct an explanation that differentiates between a plant and animal cell.

****TEACHER NOTE**

Students should write their thoughts prior to pairing with someone. This will ensure structured academic conversation and will allow for informal assessment of students' mastery of the standard at this point.

should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)
(10 - 12 minutes)

Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

“Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas.”

Review the [claim-evidence-reasoning poster](#) with students.

As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

in the activity similar to parts of an animal or plant cell?”

Explain the structures visible under the microscope.

What similarities and differences do you notice in the animal and plant cell?

How are the functions of the organelles connected to the structure?

What structure are in both animal and plant cells?

Allow students an opportunity to generate their own analogies.

These can be done individually or in a group. Have students create a slide of their “model”. Create time for presentations or group discussion for the following:

Encourage students to provide feedback

Encourage students to create an analogy for an animal and/or a plant cell.

Students cannot use the provided examples that were modeled and discussed.

Provide the students **15 minutes** of the total 35-40 minutes to build their slide and appropriate analogy.

Allow time for students to present their analogy and address all components of the following rubric.

Have students compare the information from the text to the information collected from text.

During a teacher-led discussion, the teacher should ask the following questions:

How are plant and animal cells different?

Why is it important to have cytoplasm in both the animal and plant cell?

Why is chloroplast NOT a functioning organelle in animal cells?

****TEACHER NOTE:** Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy
(10 - 15 minutes)

Vocabulary Words:

cell wall
chloroplast
nucleus
cell membrane
cytoplasm

****TEACHER NOTE**
These are the same vocabulary words from last week; however, a different strategy is being used.

Vocabulary Connect Two Strategy

Provide students with the

analysis protocol to develop an answer to the question.

writing evidence

Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning

Students will use textual evidence from the “text annotation graphic organizer” to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)

[3-5 Student Writing Template \(editable\)](#)

[3-5 Student Writing Template \(pdf\)](#)

****TEACHER NOTE:** Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions:

*How are your thoughts or understanding similar to another writer on the topic?
How are your thoughts or understanding different to another writer on the topic?
What would you like to learn more about? Why?*

The teacher will pull students samples from earlier in the unit for peer review. Be sure to hide student names.

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol:

[Claim-Evidence-Reasoning Record Observations Document](#) (google doc)

■ Claim-Evidence-Reasoni... (PDF)

1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.

2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.

3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.

Ask the following questions to students as they analyze the student samples:

■ Claim-Evidence-Reasoni...

****TEACHER NOTE**

As students review the student samples, they will begin to see

[Cell Analogy Rubric](#)

The teacher should monitor student work, ask guiding questions, and work in small groups with any students that require additional assistance.

Dedicate time for students to present to the whole group or in small groups.

[graphic organizer \(editable\)](#) or [pdf handout](#).

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer discussion, etc.). The teacher should model researching the word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word.

Allow students to work in collaborative groups to discuss and research the other provided vocabulary terms and repeat the modeled instructional strategy.

Have students collaborate, in groups, to complete the strategy for the other vocabulary terms.

Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.

Assessment for Learning: [S5L3b & S5L3b Quiz](#)

or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4

Assessment Prep

Prepare students for assessment by reviewing the following Assessment Prep Presentation.

Provide the following guidance:

Ask the students to use what they know about the tasks completed to answer the provided assessment prep question.

- What is the question asking you?
- What do you know about the vocabulary or concept in the question?
- Is this question similar to any investigations or tasks we've completed?
- How can what you've done help you answer this question?
- Just view the assessment question: What is the question asking you?

Guide students to think about how their experience connects to the question.

Using the answer choices provided, ask the students the following:

- Identify a wrong answer: How do I know this answer is incorrect?
- Identify the right answer: How do we know this answer is correct?

Allow the students time to discuss in collaborative groups.

TEACHER NOTE: If students struggle with the question, review it the next day. Do not rush to the next question; instructional time is the only time they have to prepare for the end-of-year assessment.

Labs / Investigations

Mandatory Labs	Explore Learning Gizmo	Mystery Science
uInvestigate Lab "Is a microorganism harmful or beneficial" Microscopes Activity Cell Structure Gizmo	Cell Structure	

Cell Analogy Task		
Additional- Resources/Tasks		
Supplemental Labs	5L3ABC Cells - Stemsscopes 5L4AB Microorganisms - Stemsscopes	
Culminating Performance Task	<i>CER - How do microscopes assist with seeing plant and animal cells?</i> <i>CER - How do microorganisms affect humans?</i> <i>CER - Why does our skin bend when touched and tree bark doesn't move when touched?</i> <i>CER - What are the similarities and differences between the parts and functions of the plant and animal cells?</i> <i>CER - How can we differentiate between the structure of plant and animal cells?</i>	
STEM Activities		