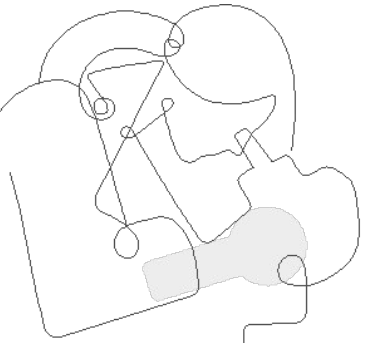
Amplify Science

The Assessment System

Grade 4, Unit 2: Vision and Light

Part 3

Strengthen workshop



School/District Name
Date
Presented by Your Name

PLPG CERTIFIED PROVIDER

Amplify's Purpose Statement

Dear teachers,

You do a job that is nearly impossible and **utterly essential.**

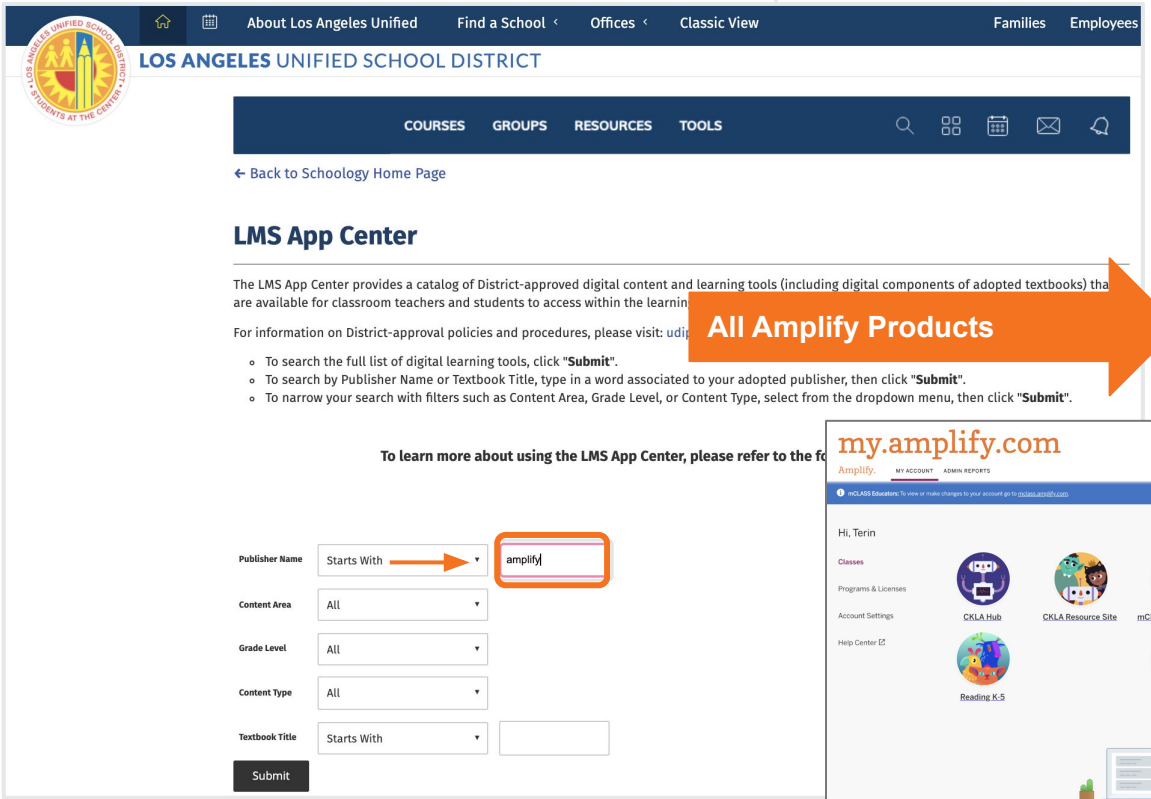
We are in your corner – extending your reach, saving you time, and enhancing your understanding of each student.

Thank you for working with us to craft rigorous and riveting learning experiences for your classroom.

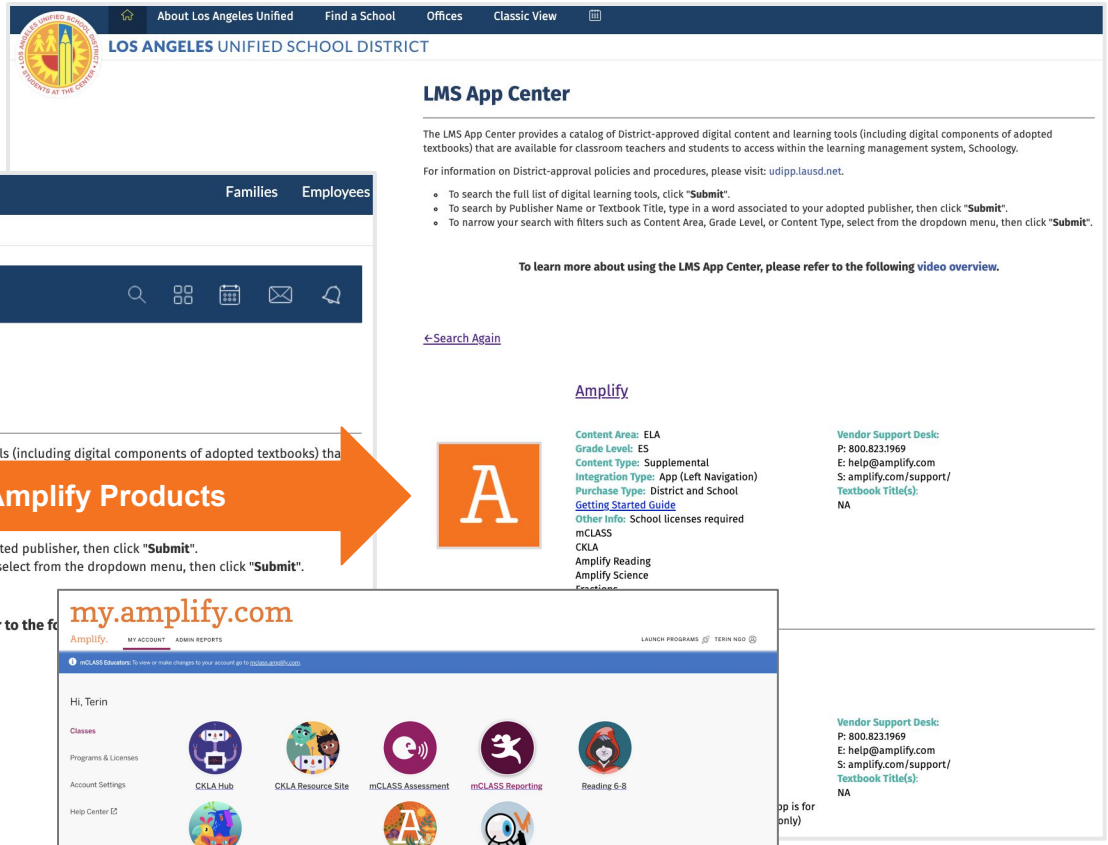
We share your goal of **inspiring all students to think deeply, creatively, and for themselves.**

Sincerely,
Amplify

Schoology



All Amplify Products



Join Amplify Science Schoology Group

To join Amplify Science Schoology ES Group: W4PK-W466-63F5B

Navigation Temperature Check

Rate yourself on your comfort level accessing Amplify Science materials and navigating a digital curriculum.

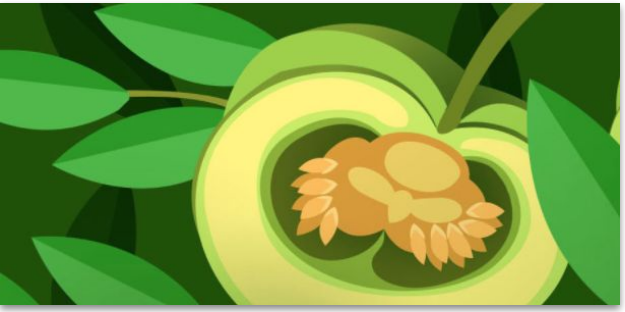
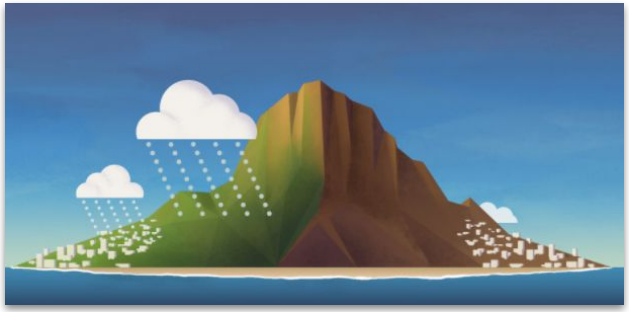
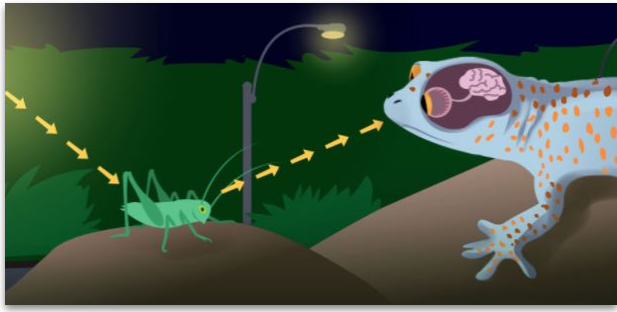
1 = Extremely Uncomfortable

2 = Uncomfortable

3 = Mild

4 = Comfortable

5 = Extremely Comfortable

Plan for the day

- Introduction
- Assessment System
- Progress Build
- Assessments
- Model Lesson
- Planning
- Closing

Overarching goals

- Describe the structure and purpose of the Amplify Science Assessment System
- Plan for the strategic use of assessment resources to analyze and respond to student work

Norms: Establishing a culture of learners

- **Take risks:** Ask any questions, provide any answers.
- **Participate:** Share your thinking, participate in discussion and reflection.
- **Be fully present:** Unplug and immerse yourself in the moment.
- **Physical needs:** Stand up, get water, take breaks.

Opening reflection

Why do we assess our students?

What is **challenging** about assessing our students?

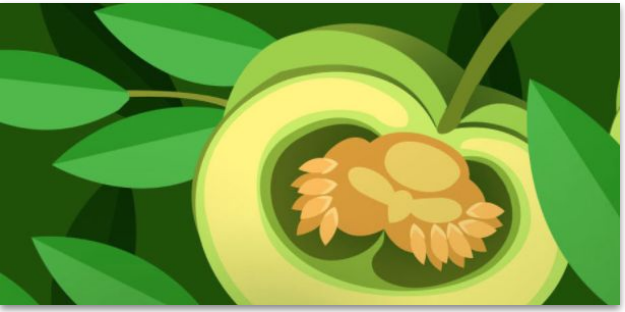
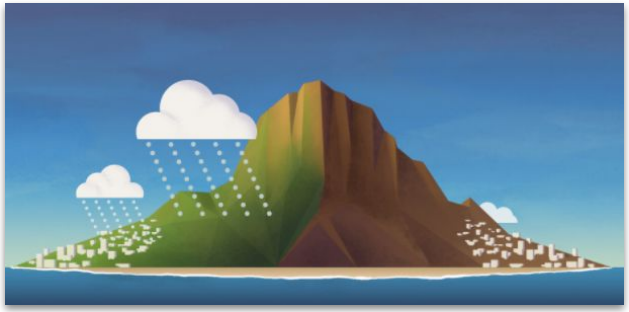
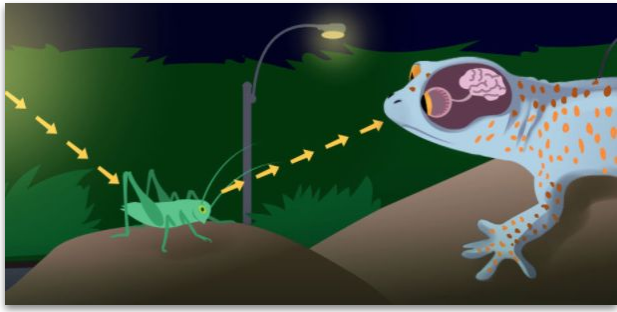
Participants Notebook

http://bit.ly/3UqNp84

Opening Reflection: Assessment

Why do we assess our students?

Why do we assess our students?

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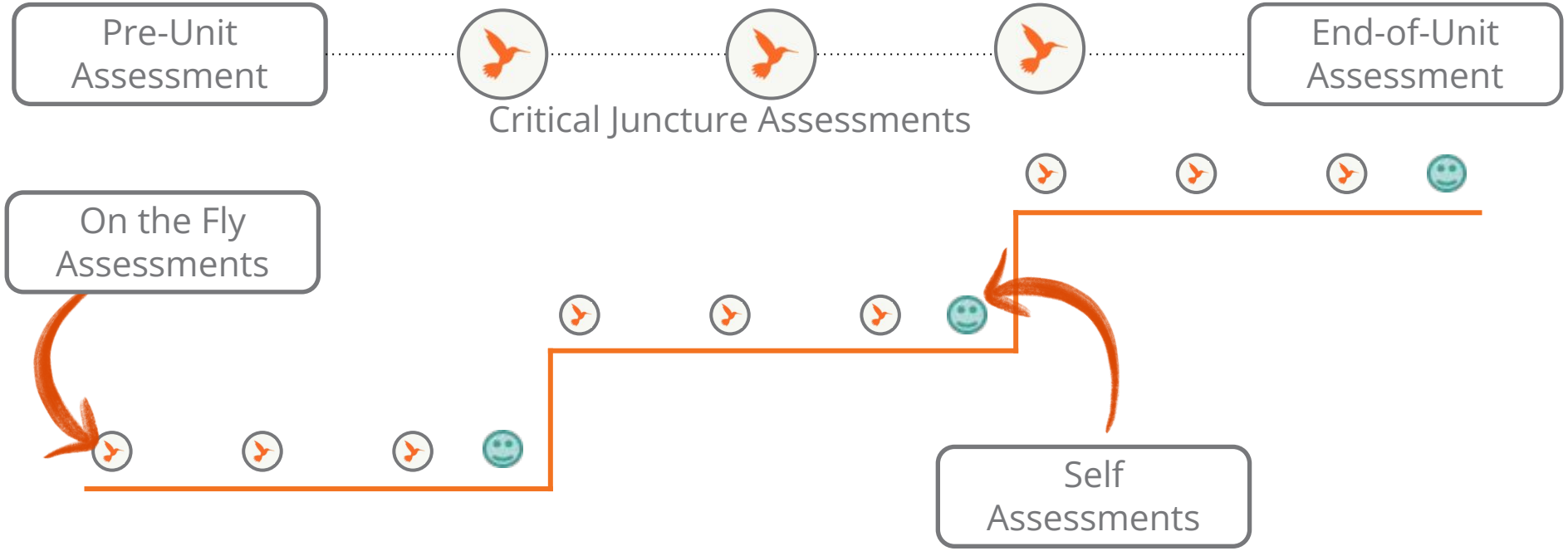
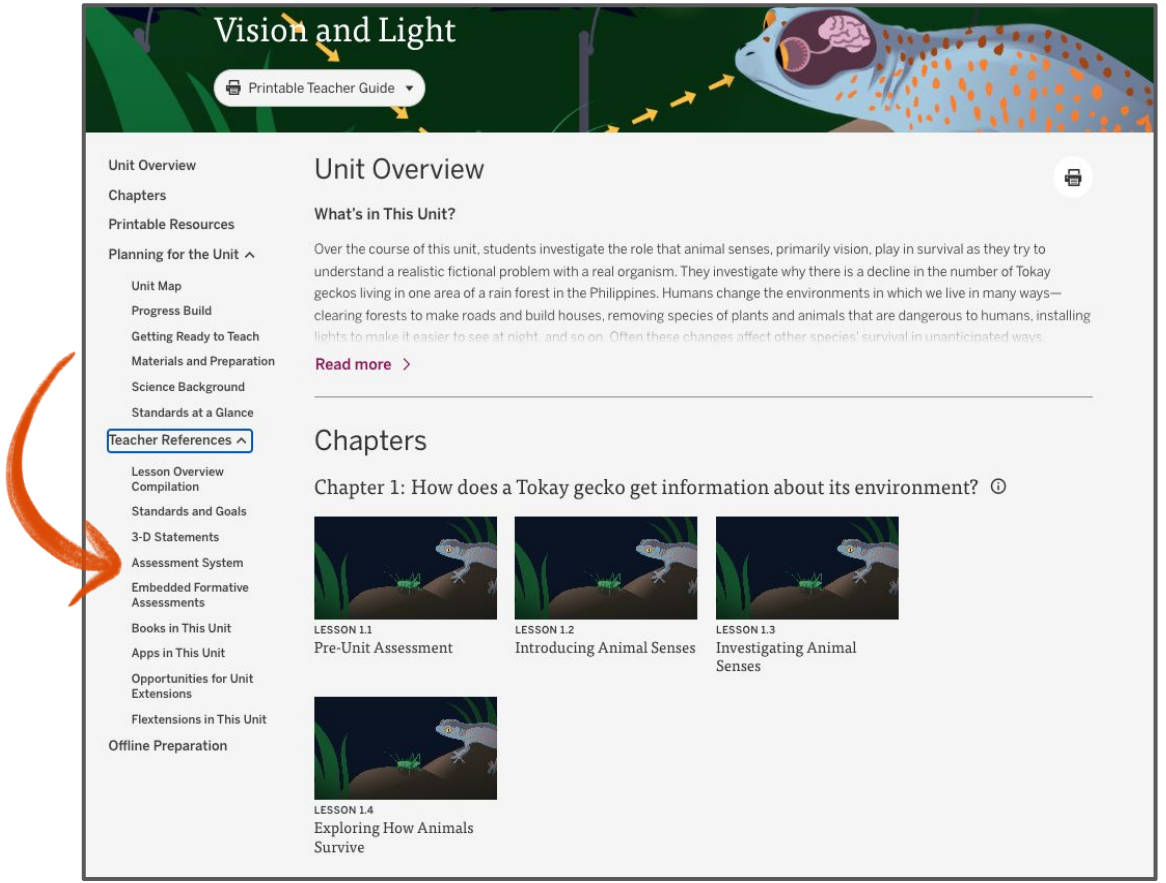
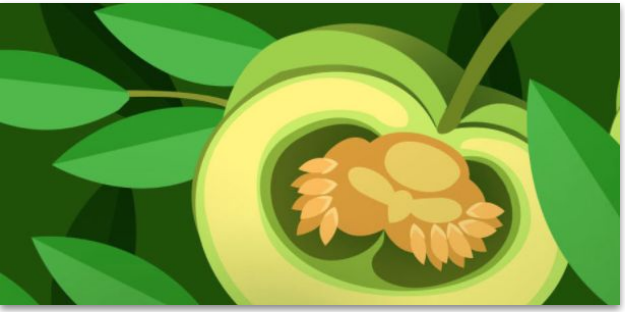
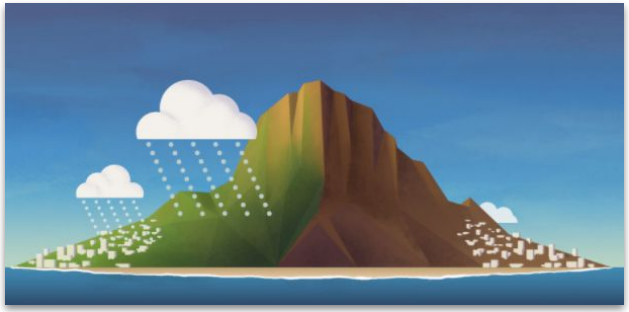
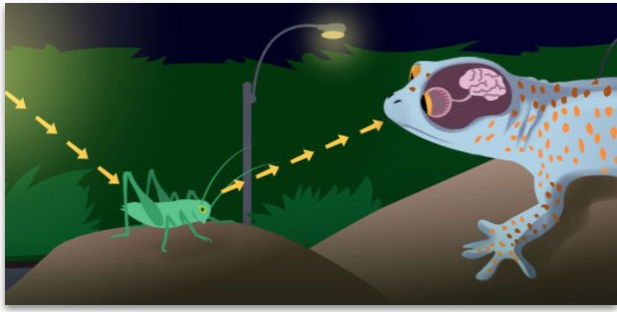
K-5 Assessment System



Assessment System Document



Questions?

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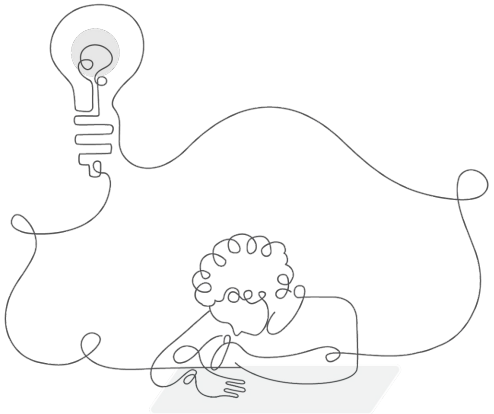
Reviewing the unit phenomenon

Vision and Light

Amplify Science units are designed around complex phenomena that drive student learning through the unit.

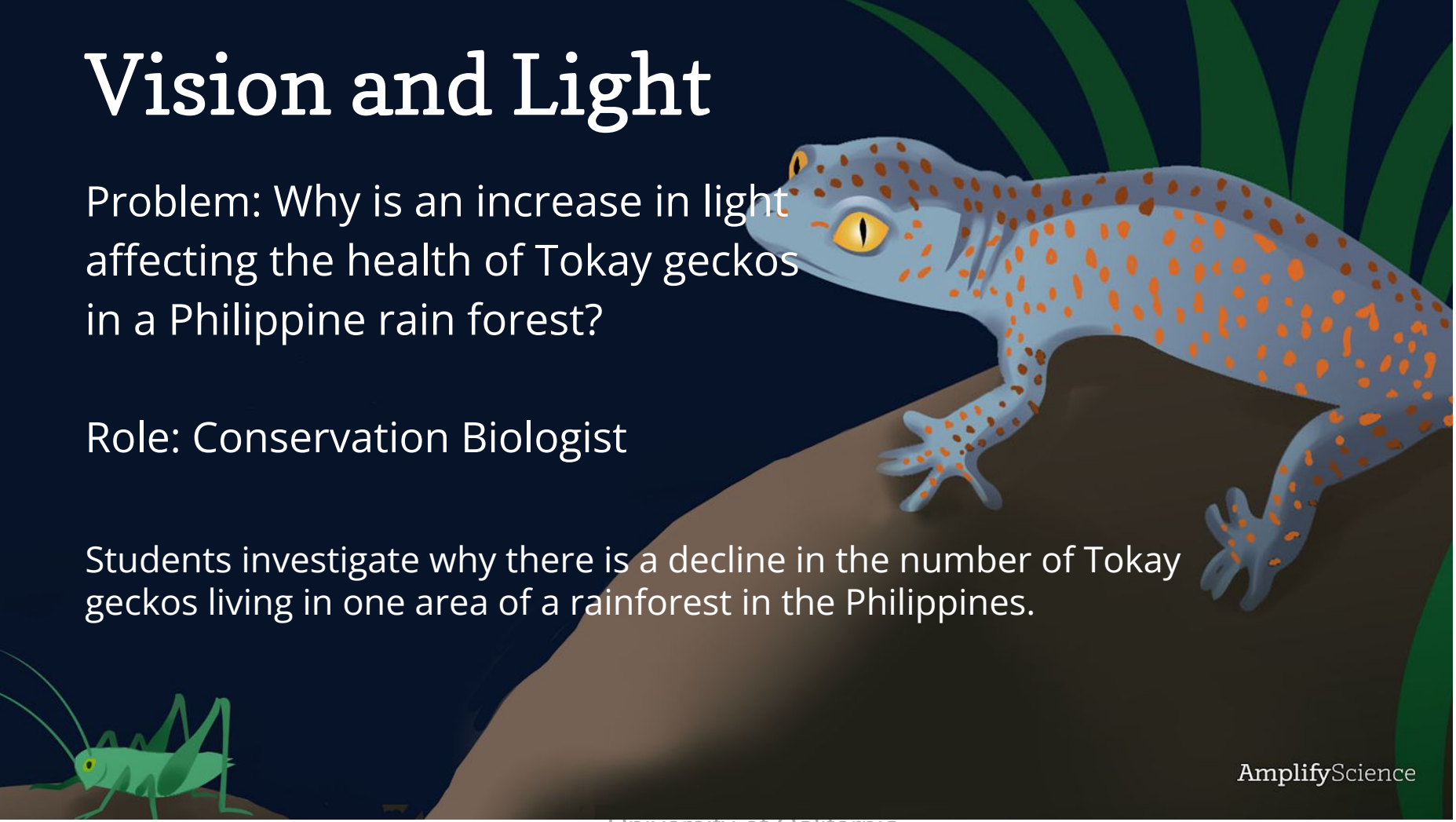


Vision and Light

Problem: Why is an increase in light affecting the health of Tokay geckos in a Philippine rain forest?

Role: Conservation Biologist

Students investigate why there is a decline in the number of Tokay geckos living in one area of a rainforest in the Philippines.



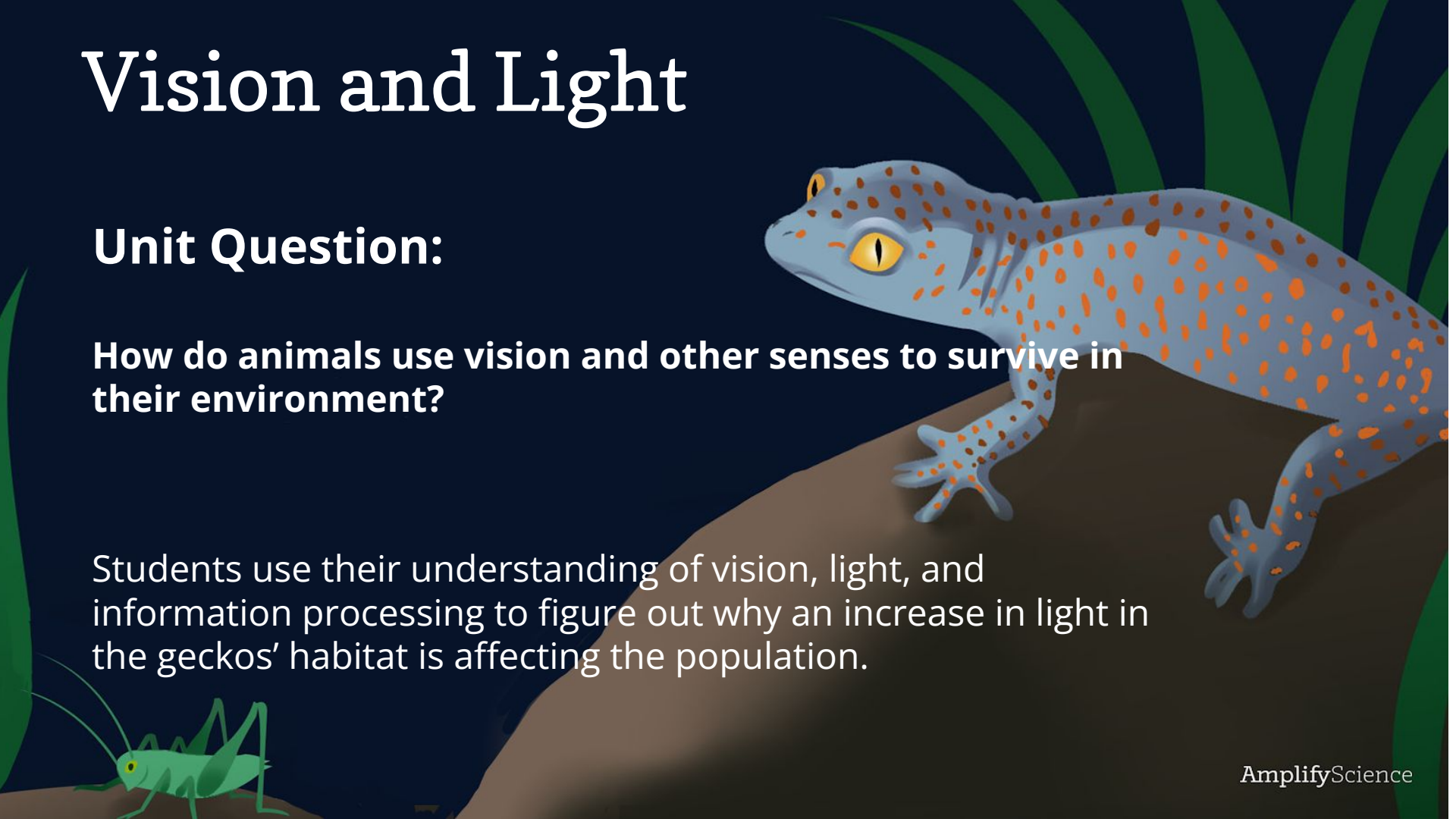
AmplifyScience

Vision and Light

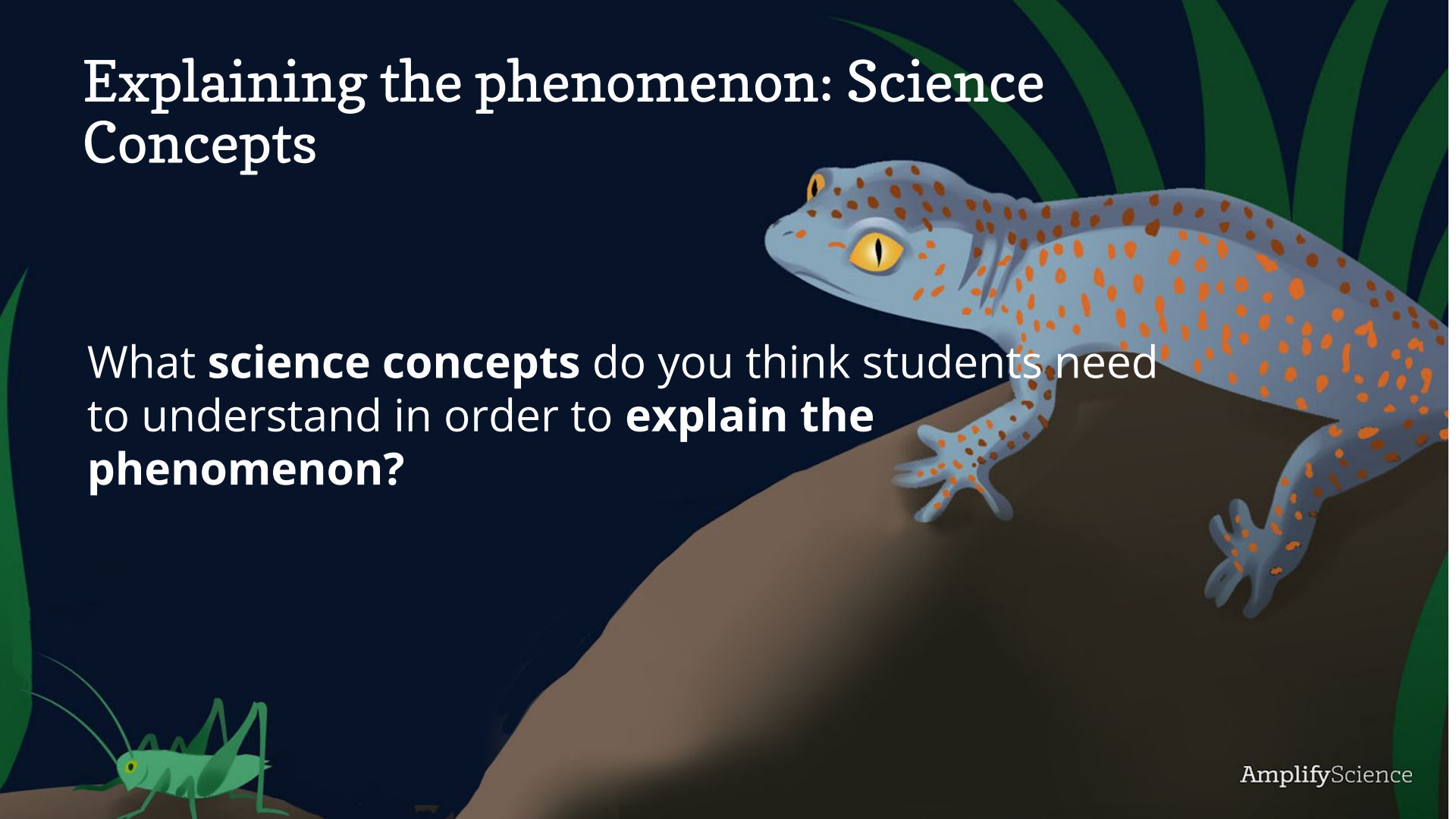
Unit Question:

How do animals use vision and other senses to survive in their environment?

Students use their understanding of vision, light, and information processing to figure out why an increase in light in the geckos' habitat is affecting the population.



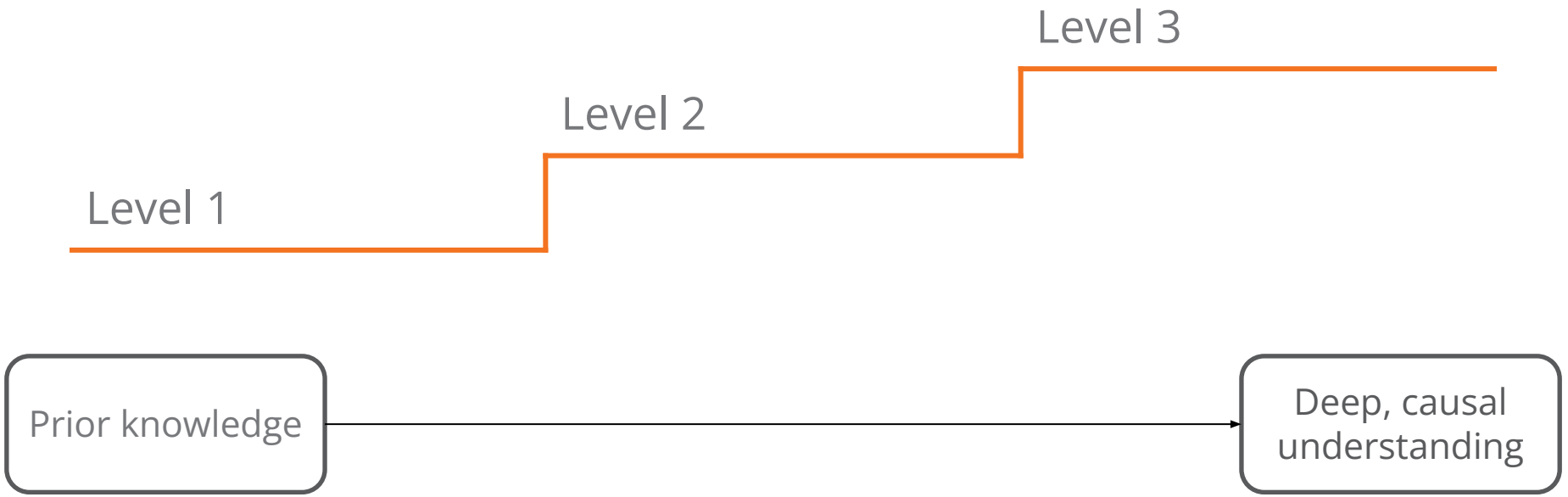
Explaining the phenomenon: Science Concepts



What **science concepts** do you think students need to understand in order to **explain the phenomenon?**

Progress Build

A unit-specific learning progression

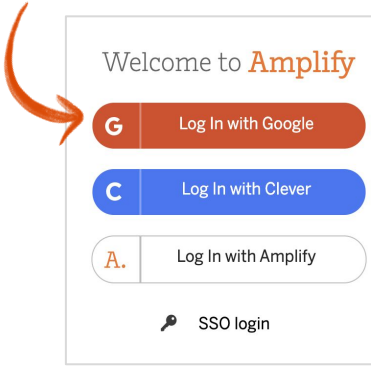


Logging in (demo account)

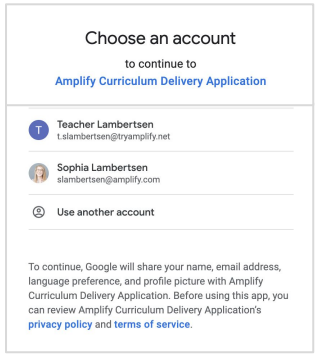
Safari or Chrome

1. Go to **learning.amplify.com**
2. Select **Log in with Google**
3. If you're already logged in with other Google accounts, click **Use another account**
4. Enter teacher demo account credentials
   - xxxxxxx@pd.tryamplify.net
   - Password: xxxx

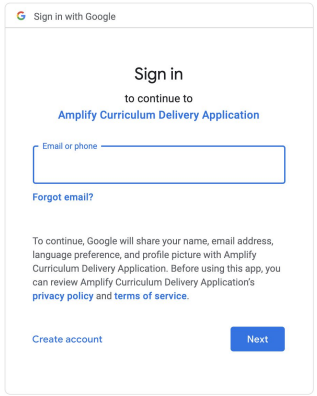
Steps 1-2

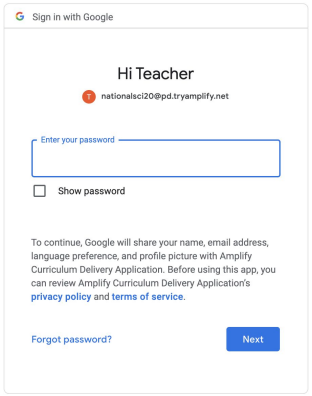


Step 3



Step 4



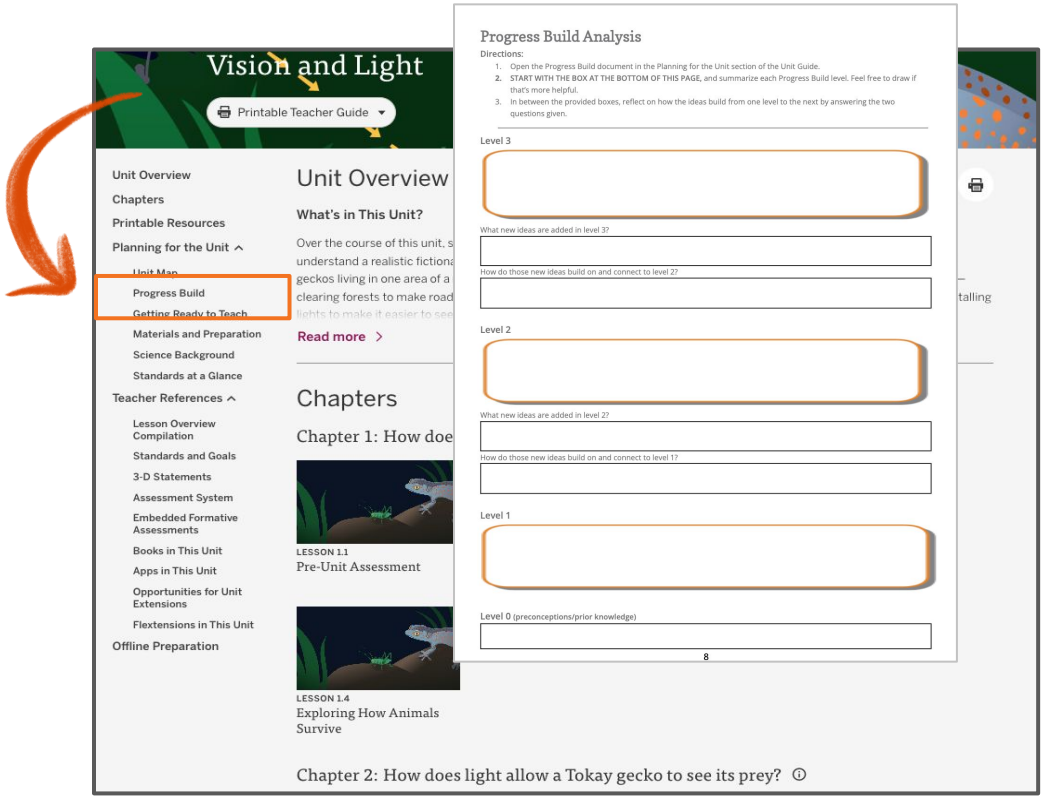


Progress Build analysis

Work time

Read and analyze your unit's Progress Build.

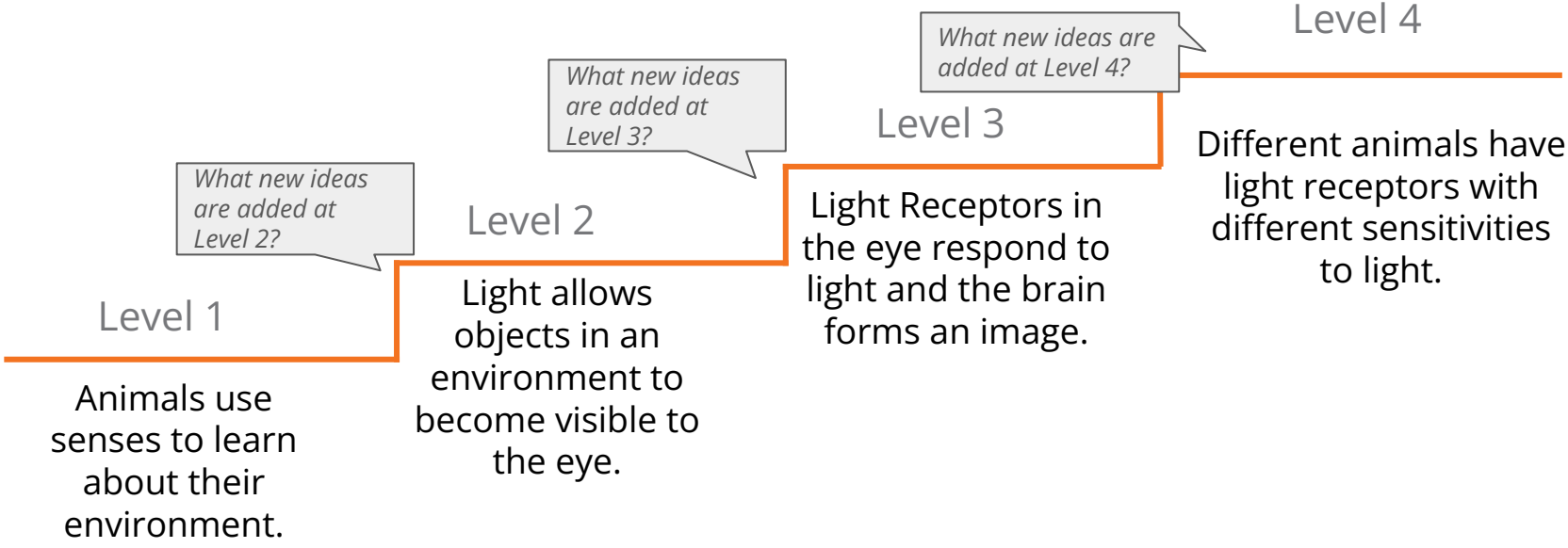
Pgs. 7-9



Progress Build

Vision and Light

Assumed prior knowledge (preconceptions): Students are expected to have had many everyday experiences using their senses to see, smell, hear, taste, and touch. Students are likely to understand that animals need to find food and avoid being eaten to survive in their environment. While these ideas are not necessary for students to participate fully in the unit, having exposure to them will prepare students well for what they will be learning.



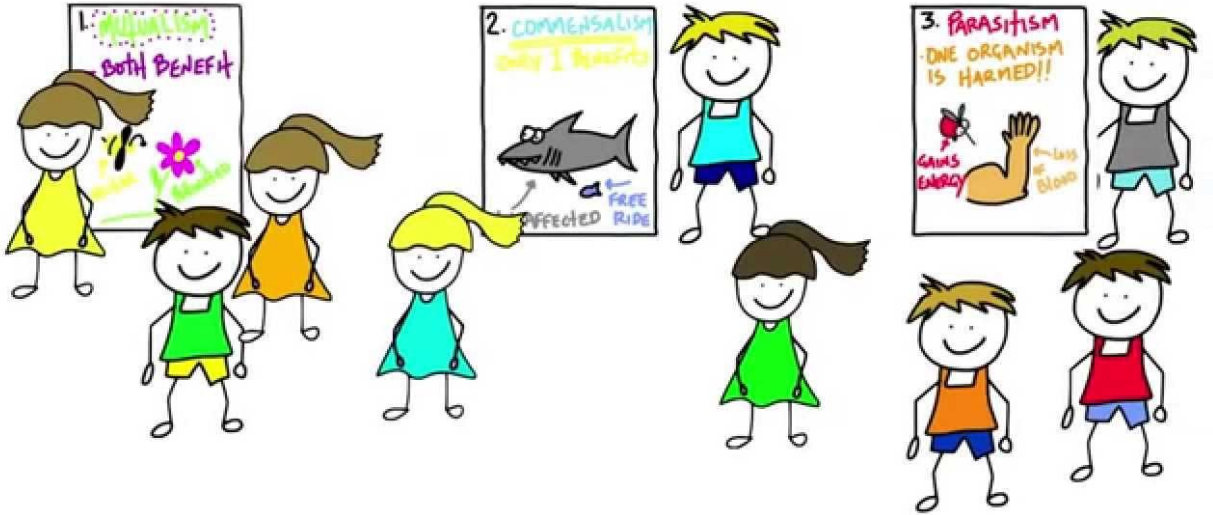
Progress Build analysis

Group work time

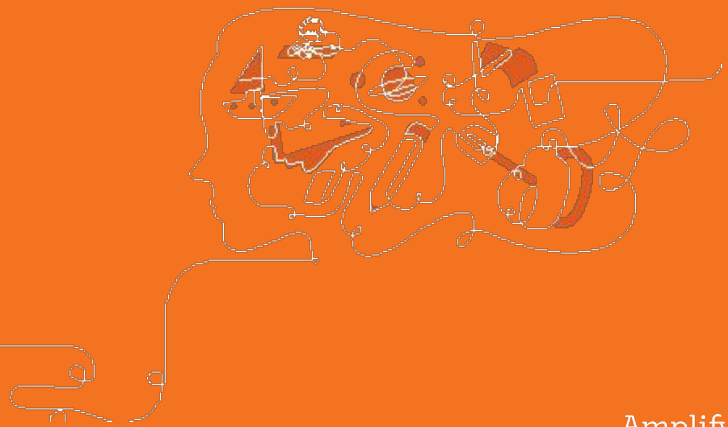
- With your group or partner, create a visual representation of one level of the progress build.

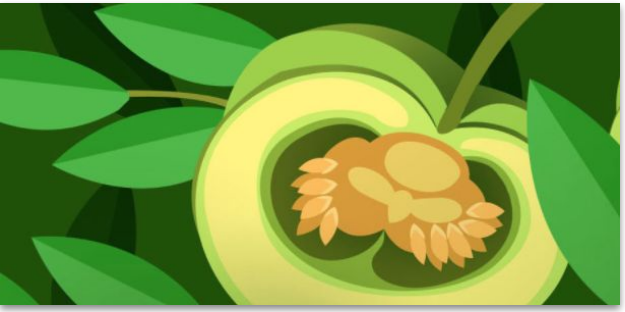
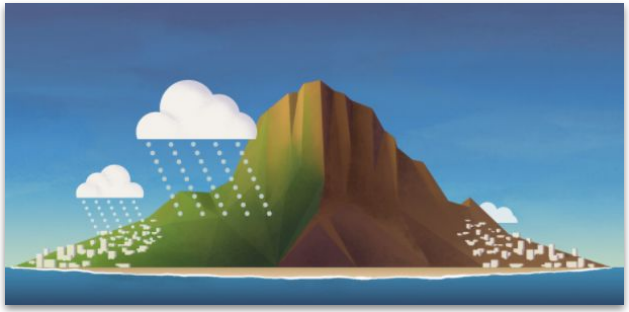
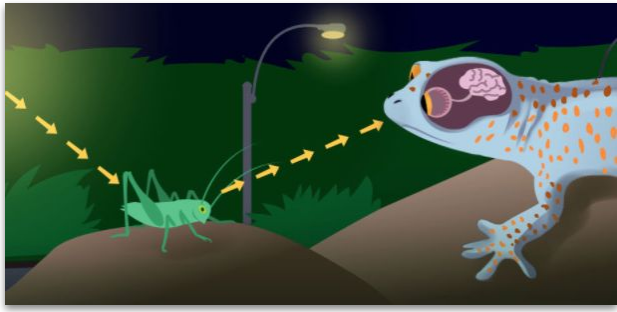
Progress Build analysis

Gallery Walk



Break



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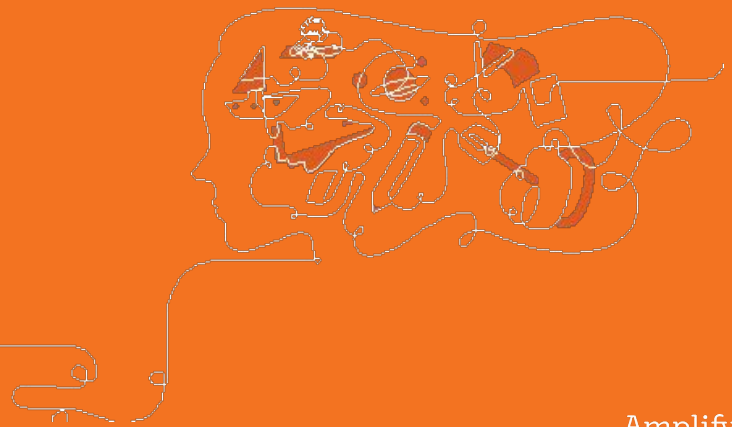
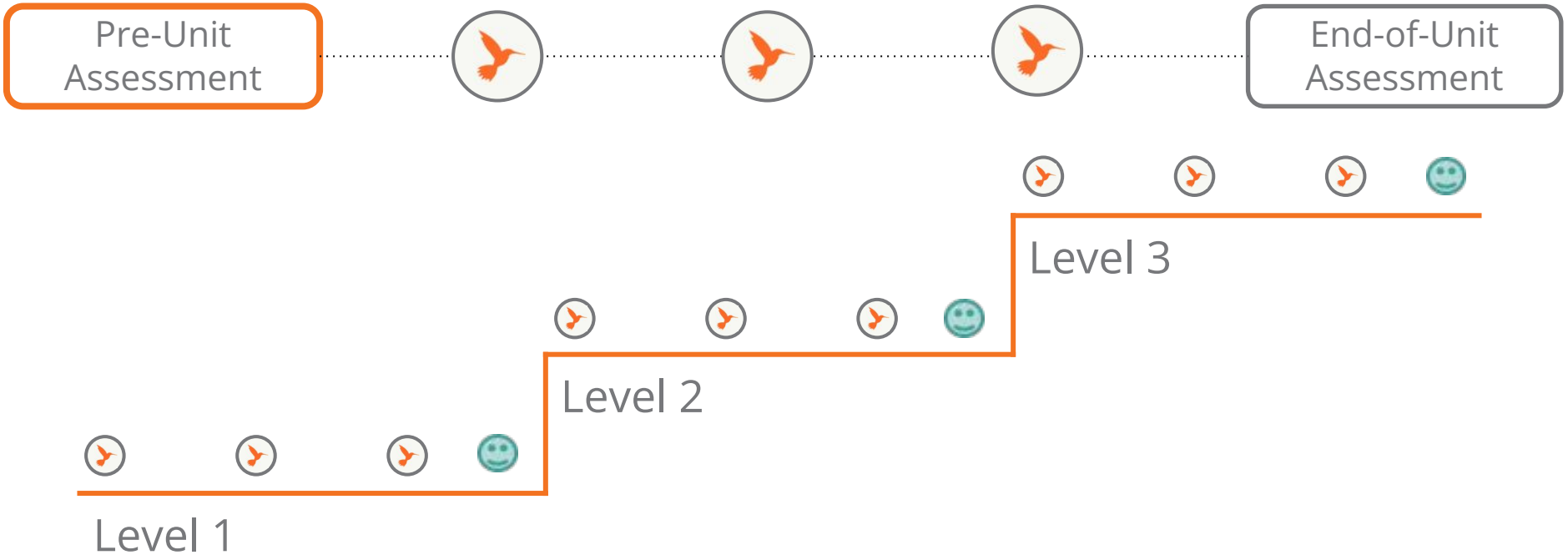
Pre-Unit Assessment



Pre and End-of-Unit Assessment



Progress Build

Vision and Light

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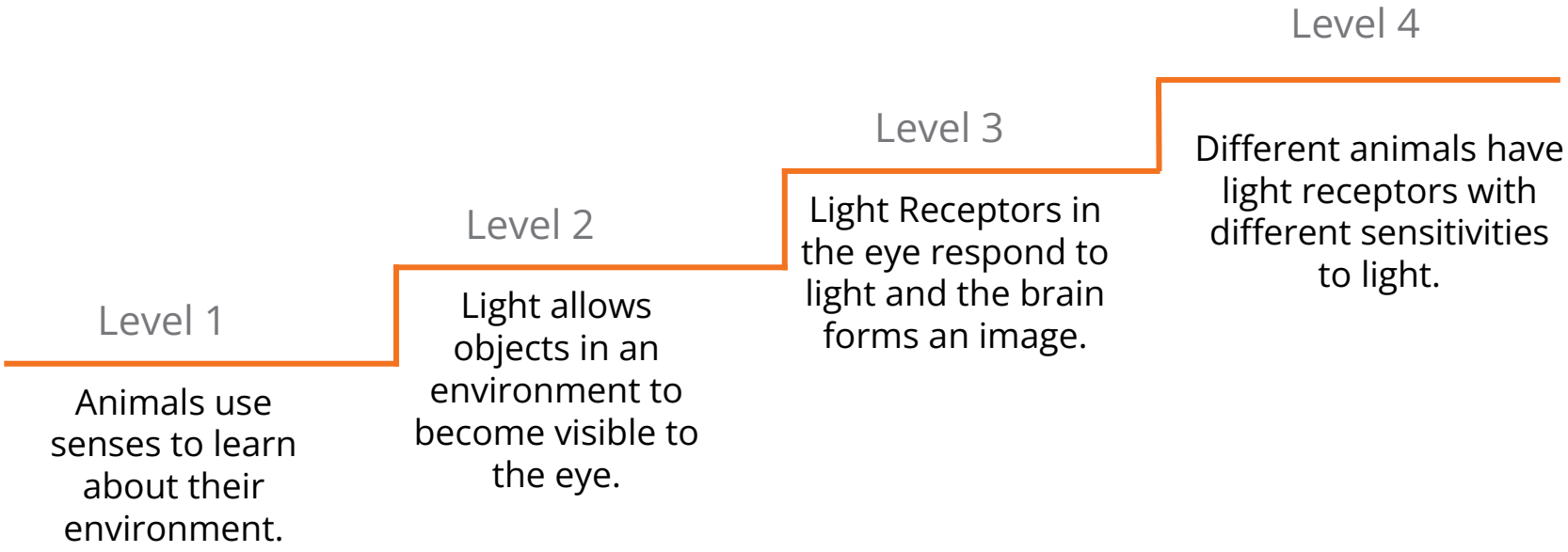
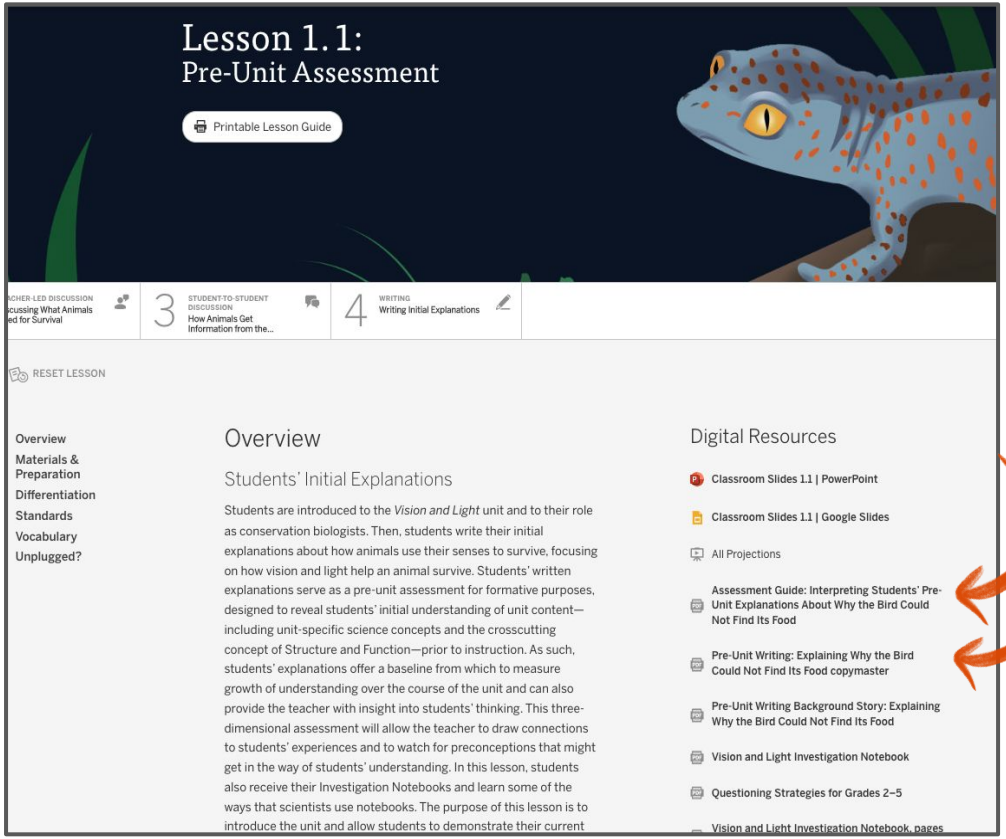


Pre-Unit Assessment

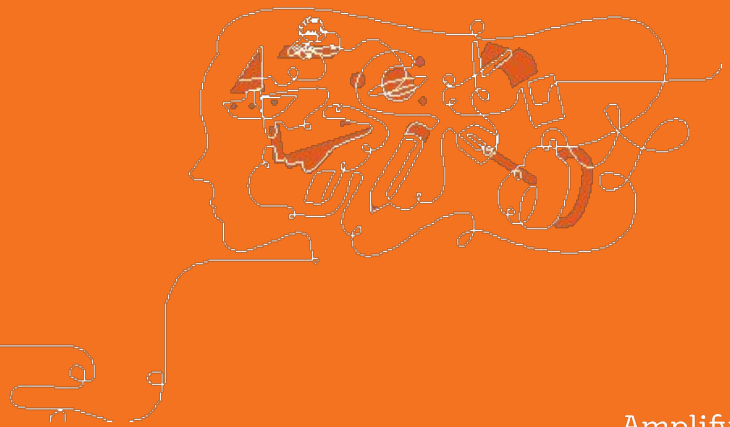
Lesson 1.1

Locate the Pre-Unit Assessment (Writing) and Assessment Guide in Lesson 1.1 of your unit and skim through them.

Open up the classroom slides and see how the pre-unit assessment is embedded in the lesson.



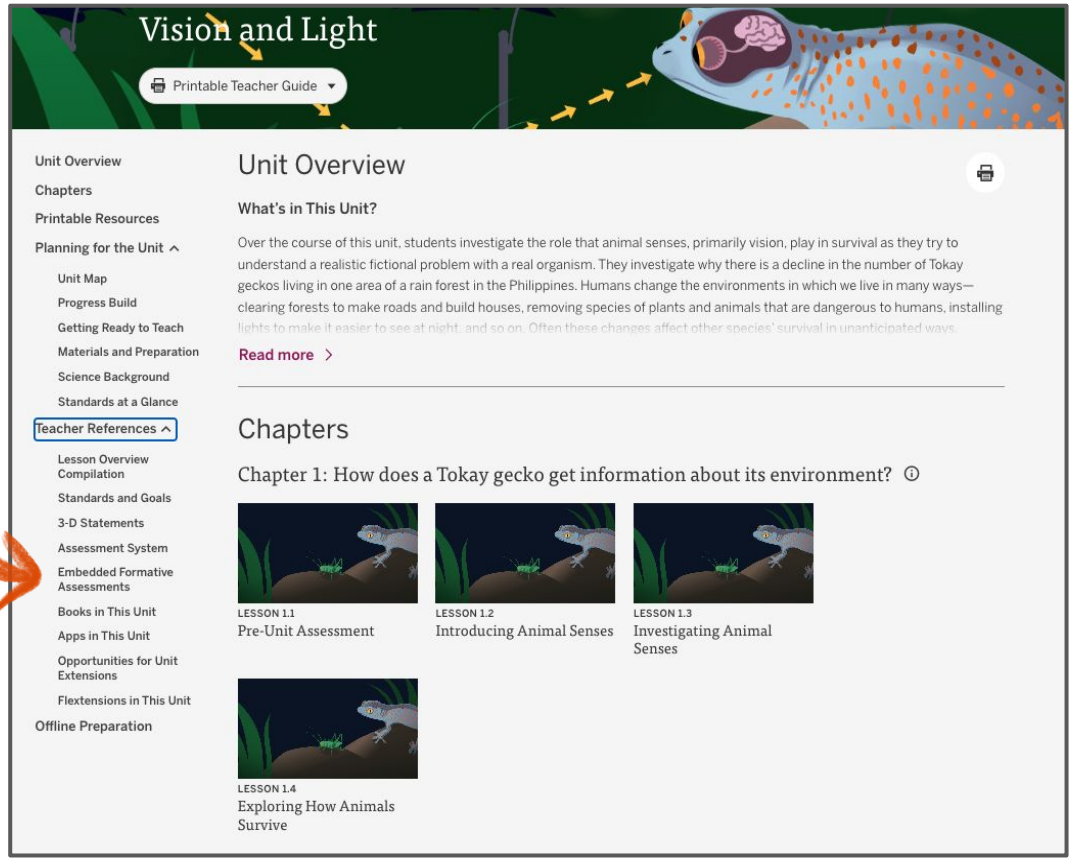
Formative Assessments



K-5 Assessment System

Formative Assessment Document

Vision and Light



On-the-Fly Assessments

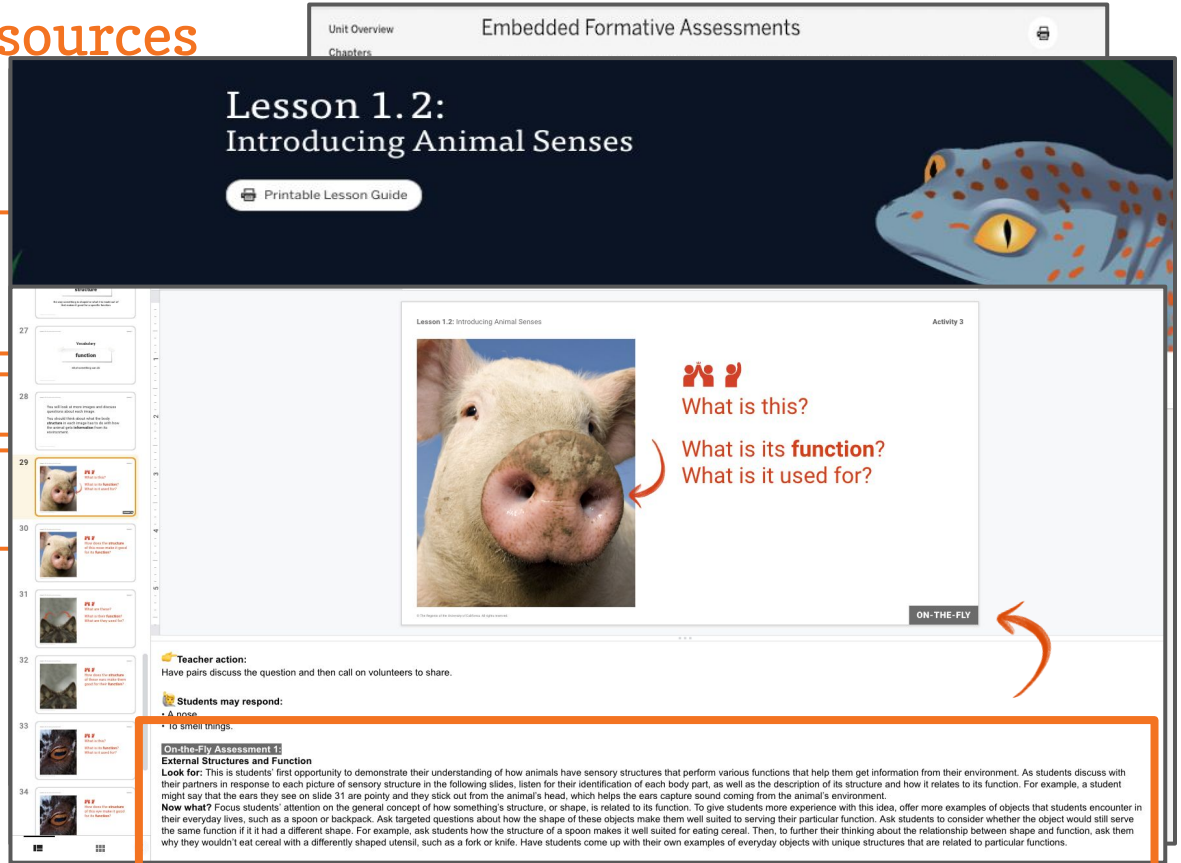
- Track student progress within a Progress Build level
- Embedded into instruction
- Assessment resource includes “Look for” and “Now what”
- Incremental build towards the Critical Juncture

Formative assessment information

Locating assessment resources

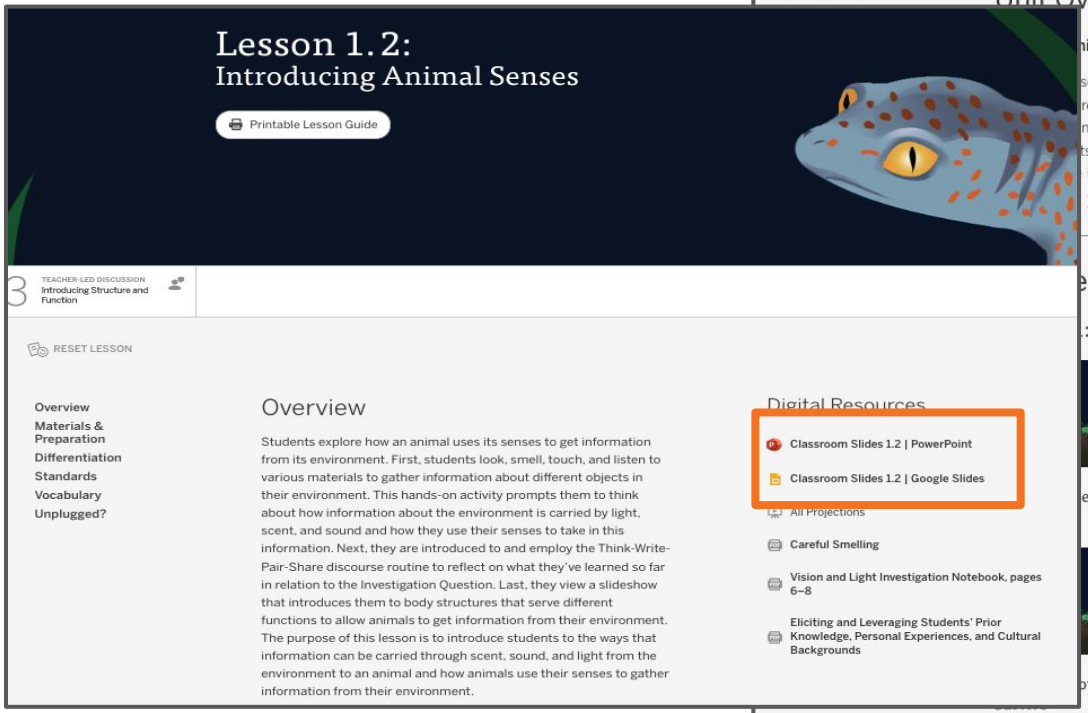
Full text of assessment

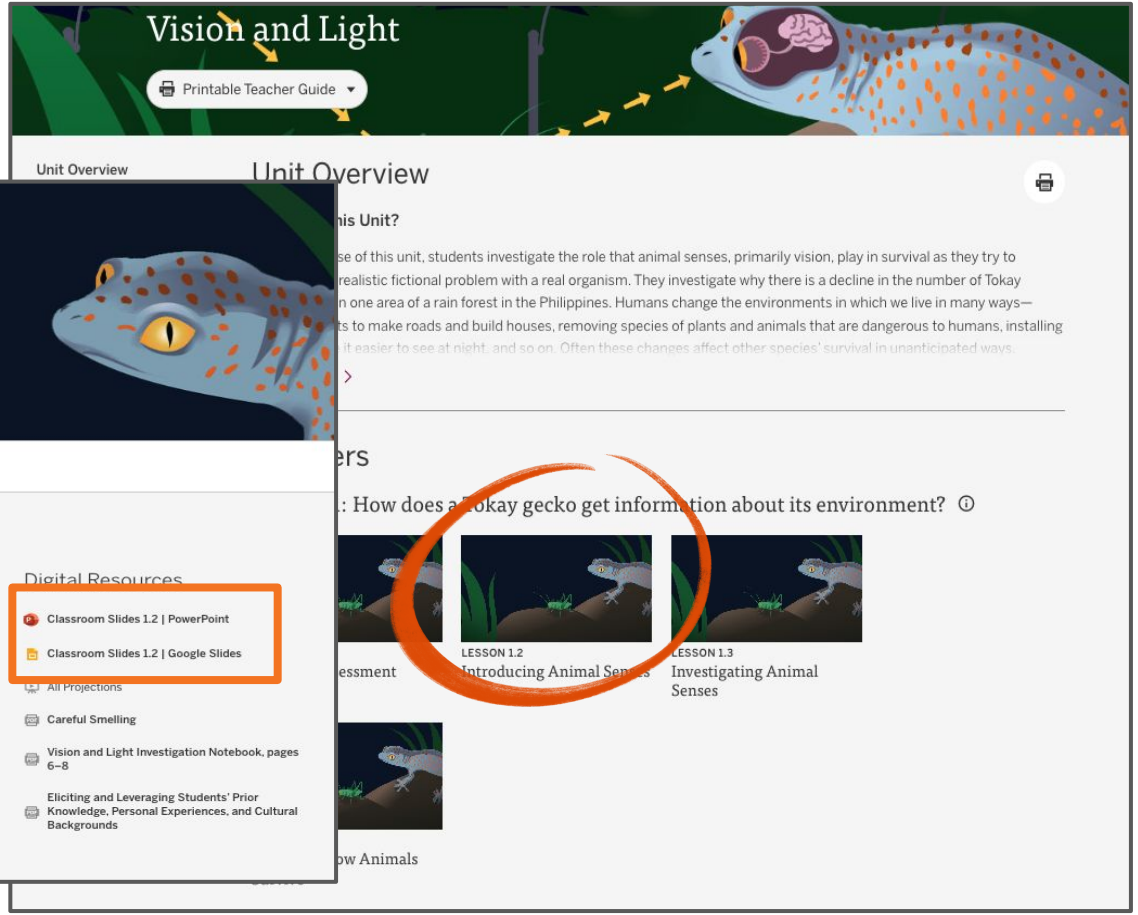
- Embedded Formative Assessments document
- Instructional guide
- Classroom Slides notes



Classroom slides

Lesson 1.2, Activity 3





Teacher action:
Have pairs discuss the question and then call on volunteers to share.

Students may respond:
- A nose.
- To smell things.

On-the-Fly Assessment 1:
External Structures and Function
Look for: This is students' first opportunity to demonstrate their understanding of how animals have sensory structures that perform various functions that help them get information from their environment. As students discuss with their partners in response to each picture of sensory structure in the following slides, listen for their identification of each body part, as well as the description of its structure and how it relates to its function. For example, a student might say that the ears they see on slide 31 are pointy and they stick out from the animal's head, which helps the ears capture sound coming from the animal's environment.
Now what? Focus students' attention on the general concept of how something's structure, or shape, is related to its function. To give students more experience with this idea, offer more examples of objects that students encounter in their everyday lives, such as a spoon or backpack. Ask targeted questions about how the shape of these objects make them well suited to serving their particular function. Ask students to consider whether the object would still serve the same function if it it had a different shape. For example, ask students how the structure of a spoon makes it well suited for eating cereal. Then, to further their thinking about the relationship between shape and function, ask them why they wouldn't eat cereal with a differently shaped utensil, such as a fork or knife. Have students come up with their own examples of everyday objects with unique structures that are related to particular functions.

Embedded Formative Assessment

Lesson 1.2, Activity 3

On-the-Fly Assessment 1: External Structures and Function

Look for: This is students' first opportunity to demonstrate their understanding of how animals have sensory structures that perform various functions that help them get information from their environment. As students discuss with their partners in response to each picture of sensory structure in the slideshow, listen for their identification of each body part, as well as the description of its structure and how it relates to its function. For example, a student might say that the ears they see on the slide are pointy and they stick out from the animal's head, which helps the ears capture sound coming from the animal's environment.

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Formative Assessment Resource

Lesson 1.2, Activity 3

On-the-Fly Assessment 1: External Structures and Function

Look for: This is students' fi[illegible]pportunity to demonstrate their understanding of how animals have sensory structures that perfor[illegible]unctions that help them get information from their environment. As students discuss with their partners in r[illegible]onse to each picture of sensory structure in the slideshow, listen for their identification of each body part, as well as the description of its structure and how it relates to its function. For example, a student might say that the ears they see on the slide are pointy and they stick out from the animal's head, which helps the ears capture sound coming from the animal's environment.

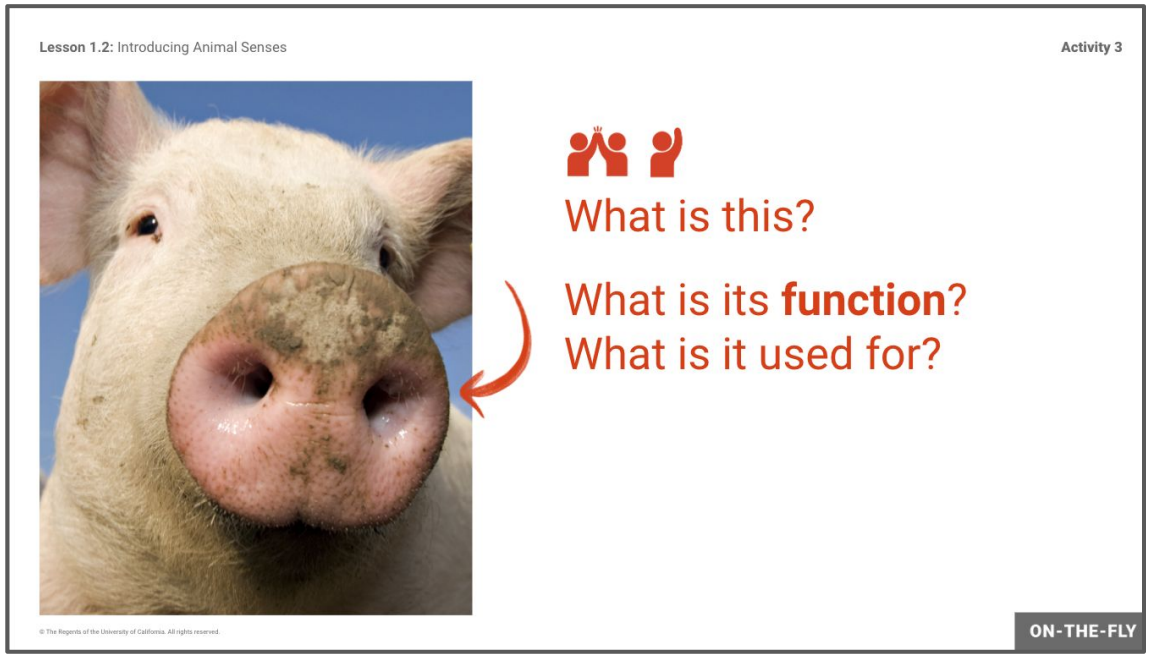
Look for 1

Now what? Focus students' attention on the general concept of how something's structure, or shape, is related to its function. To give students more experience with this idea, offer more examples of objects that students encounter in their everyday lives, such as a spoon or backpack. Ask targeted questions about how the shape of these objects make them well suited to serving their particular function. Ask students to consider whether the object would still serve the same function if it had a different shape. For example, ask students how the structure of a spoon makes it well suited for eating cereal. Then, to further their thinking about the relationship between shape and function, ask them why they wouldn't eat cereal with a differently shaped utensil, such as a fork or knife. Have students come up with their own examples of everyday objects with unique structures that are related to particular functions.

Example assessment (On-the-Fly, Lesson 1.2, Activity 3)

Reflection

- What **data** can a teacher collect from this activity?
- What can a teacher **do** with this information?

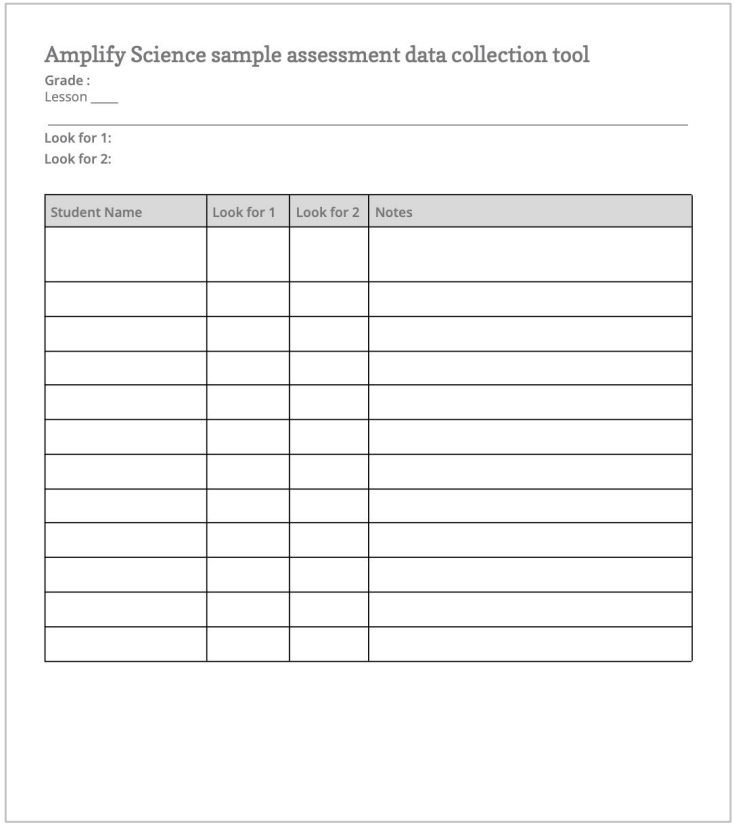


Classroom connection

Collecting formative assessment data

Plan ahead for what you're looking and listening for.

Create a system that's easy for you to use.



Amplify Science sample assessment data collection tool

Grade :
Lesson ____

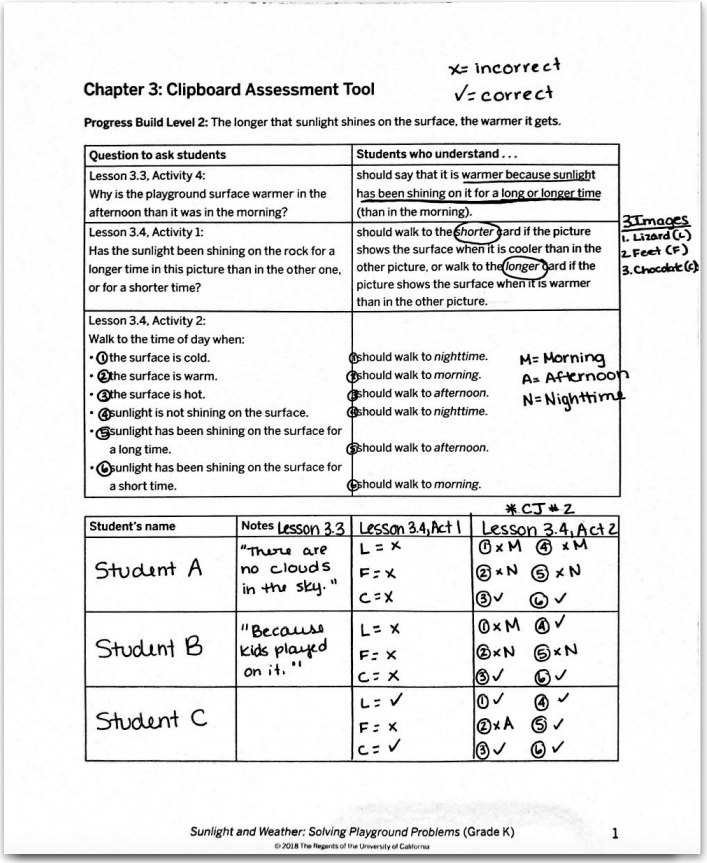
Look for 1:
Look for 2:

Student Name	Look for 1	Look for 2	Notes

Pgs. 14-15

K-1 Clipboard Assessment Tool

The Clipboard Assessment Tool offers a support for collecting data for the On-the-Fly and Critical Juncture Assessments that align to each Progress Build level in the unit.



x= incorrect
✓= correct

Chapter 3: Clipboard Assessment Tool

Progress Build Level 2: The longer that sunlight shines on the surface, the warmer it gets.

Question to ask students	Students who understand . . .
Lesson 3.3, Activity 4: Why is the playground surface warmer in the afternoon than it was in the morning?	should say that it is warmer because sunlight has been shining on it for a long or longer time (than in the morning).
Lesson 3.4, Activity 1: Has the sunlight been shining on the rock for a longer time in this picture than in the other one, or for a shorter time?	should walk to the *shorter* card if the picture shows the surface when it is cooler than in the other picture, or walk to the *longer* card if the picture shows the surface when it is warmer than in the other picture.
Lesson 3.4, Activity 2: Walk to the time of day when: • ① the surface is cold. • ② the surface is warm. • ③ the surface is hot. • ④ sunlight is not shining on the surface. • ⑤ sunlight has been shining on the surface for a long time. • ⑥ sunlight has been shining on the surface for a short time.	① should walk to *nighttime*. ② should walk to *morning*. ③ should walk to *afternoon*. ④ should walk to *nighttime*. ⑤ should walk to *afternoon*. ⑥ should walk to *morning*.

3 Images
1. Lizard (L)
2. Feet (F)
3. Chocolate (C)

M= Morning
A= Afternoon
N= Nighttime

* CJ # 2

Student's name	Notes Lesson 3.3	Lesson 3.4, Act 1	Lesson 3.4, Act 2
Student A	"There are no clouds in the sky."	L = x F = x C = x	① x M ④ x M ② x N ⑤ x N ③ ✓ ⑥ ✓
Student B	"Because kids played on it."	L = x F = x C = x	① x M ④ ✓ ② x N ⑤ x N ③ ✓ ⑥ ✓
Student C		L = ✓ F = x C = ✓	① ✓ ④ ✓ ② x A ⑤ ✓ ③ ✓ ⑥ ✓

Sunlight and Weather: Solving Playground Problems (Grade K) 1

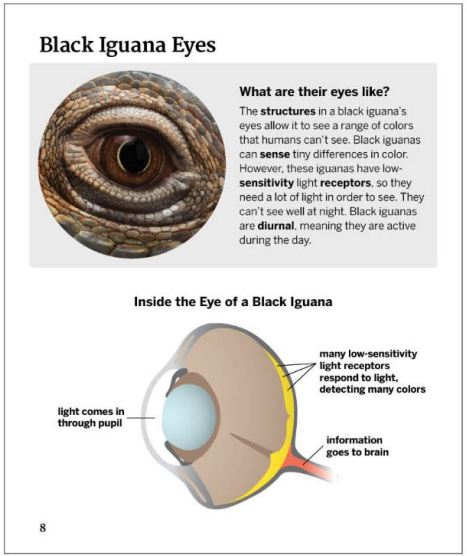
Additional formative assessment information

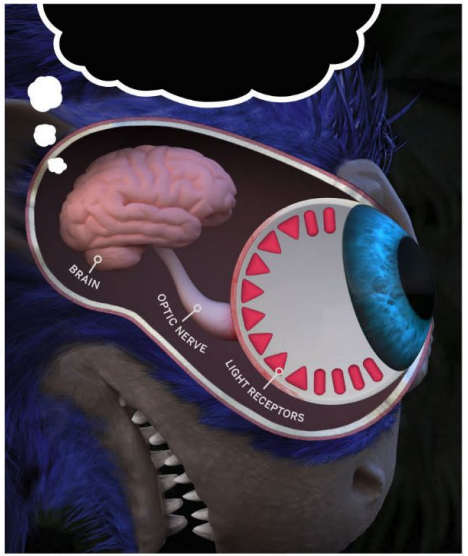
On-the-Fly Assessments

In addition to assessing concepts in the Progress Build, some On-the-Fly Assessments provide data about:

- Science and Engineering Practices
- Crosscutting Concepts
- Literacy skills
- Student collaboration

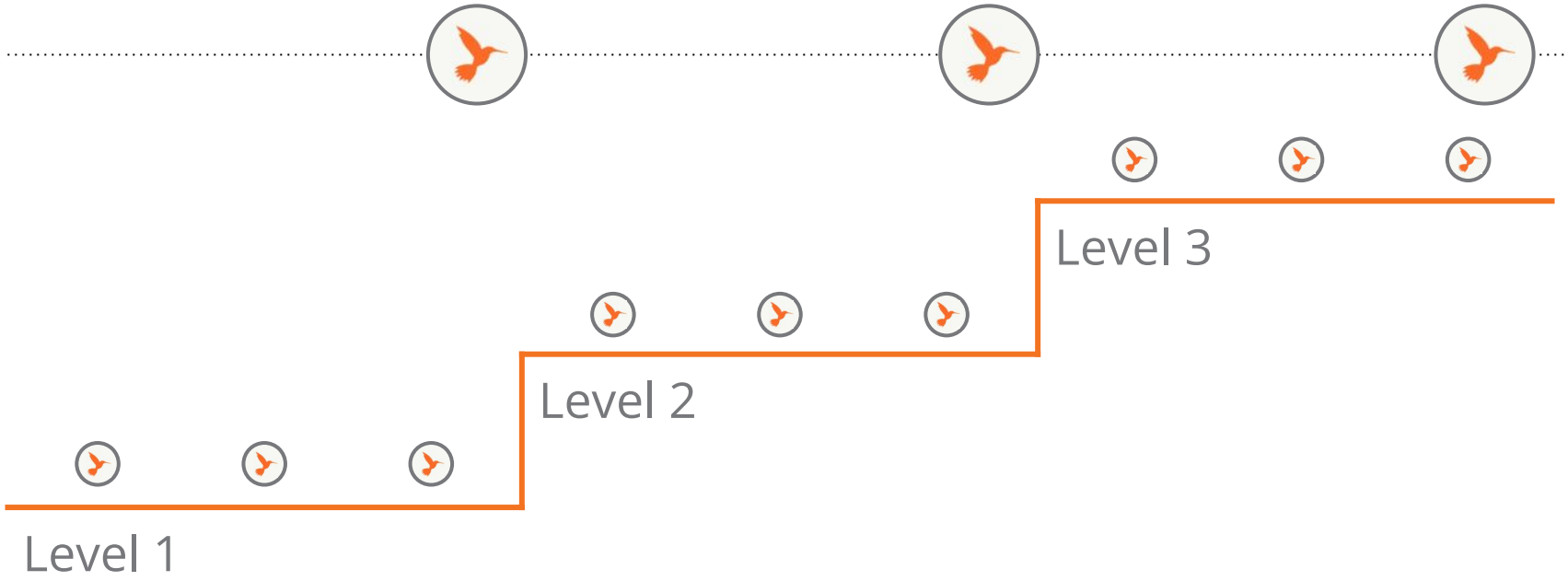
Eyes in the Reference Book and Sim





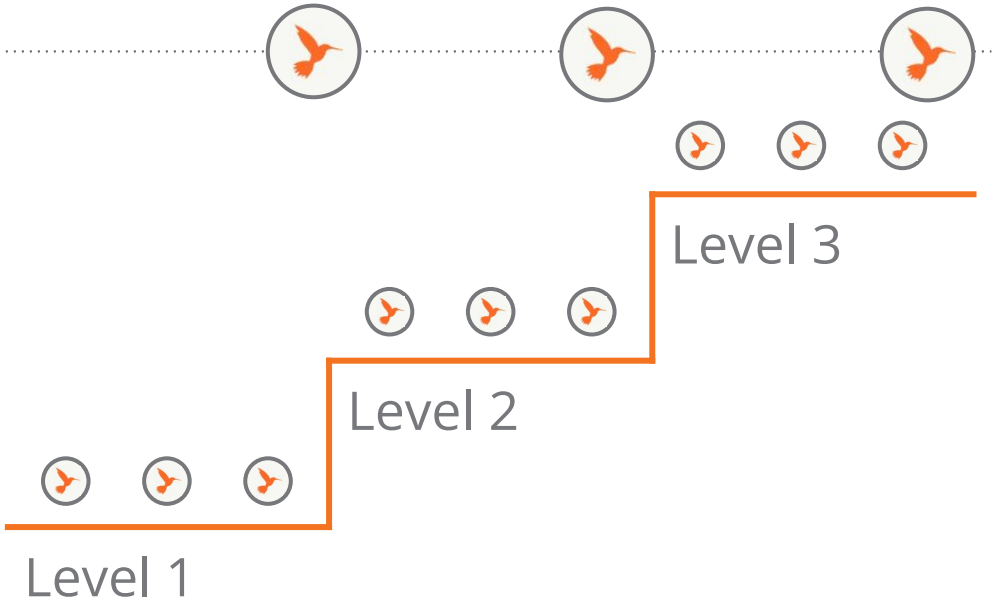
Questions?

Critical Juncture Assessments



Critical Juncture Assessments

- Track student progress between Progress Build levels
- Embedded into instruction
- Assessment resource includes “Assess Understanding” and “Tailor Instruction”



K-5 Assessment System

Pre-Unit Assessment

1.4, Act 1

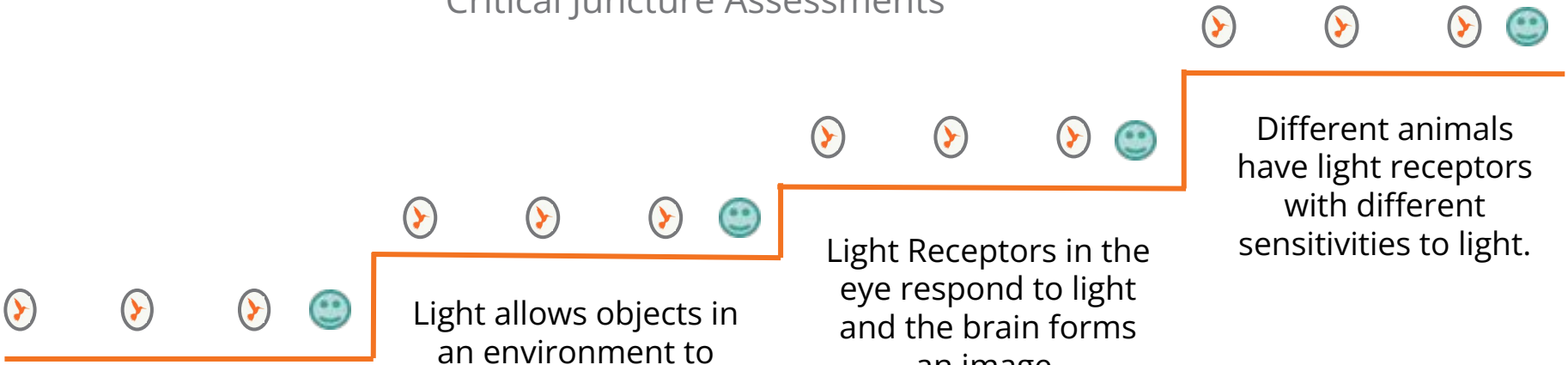
2.5, Act 3

3.5, Act 4

4.4, Act 2

End-of-Unit Assessment

Critical Juncture Assessments



Animals use senses to learn about their environment.

Light allows objects in an environment to become visible to the eye.

Light Receptors in the eye respond to light and the brain forms an image.

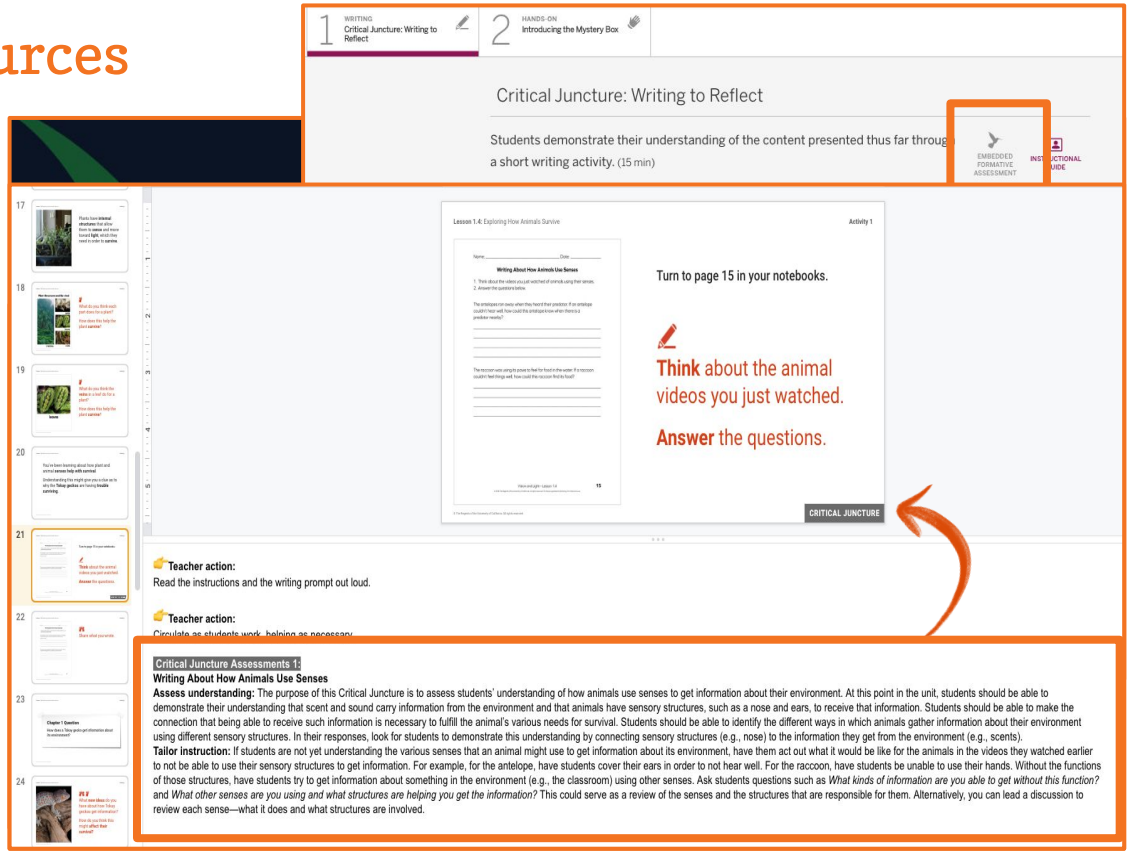
Different animals have light receptors with different sensitivities to light.

Formative assessment information

Locating assessment resources

Full text of assessment

- Embedded Formative Assessments document
- Instructional guide
- Classroom Slides notes



Name: _____ Date: _____

Writing About How Animals Use Senses

1. Think about the videos you just watched of animals using their senses.
2. Answer the questions below.

The antelopes ran away when they heard their predator. If an antelope couldn't hear well, how could this antelope know when there is a predator nearby?

_____

_____

_____

_____

The raccoon was using its paws to feel for food in the water. If a raccoon couldn't feel things well, how could this raccoon find its food?

_____

_____

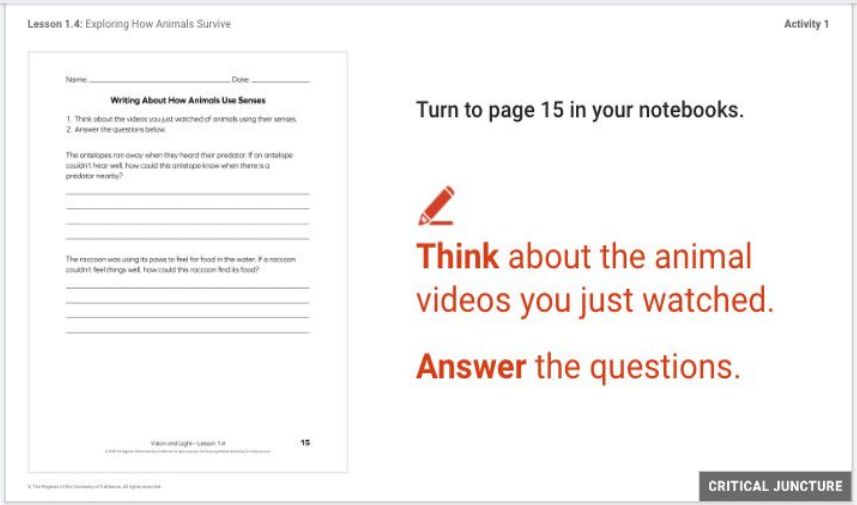
_____

_____

Turn to page 15 in your notebooks.

Think about the animal videos you just watched.

Answer the questions.



👉**Teacher action:**
Read the instructions and the writing prompt out loud.

👉**Teacher action:**
Circulate as students work, helping as necessary.

Critical Juncture Assessments 1:
Writing About How Animals Use Senses
Assess understanding: The purpose of this Critical Juncture is to assess students' understanding of how animals use senses to get information about their environment. At this point in the unit, students should be able to demonstrate their understanding that scent and sound carry information from the environment and that animals have sensory structures, such as a nose and ears, to receive that information. Students should be able to make the connection that being able to receive such information is necessary to fulfill the animal's various needs for survival. Students should be able to identify the different ways in which animals gather information about their environment using different sensory structures. In their responses, look for students to demonstrate this understanding by connecting sensory structures (e.g., nose) to the information they get from the environment (e.g., scents).
Tailor instruction: If students are not yet understanding the various senses that an animal might use to get information about its environment, have them act out what it would be like for the animals in the videos they watched earlier to not be able to use their sensory structures to get information. For example, for the antelope, have students cover their ears in order to not hear well. For the raccoon, have students be unable to use their hands. Without the functions of those structures, have students try to get information about something in the environment (e.g., the classroom) using other senses. Ask students questions such as *What kinds of information are you able to get without this function?* and *What other senses are you using and what structures are helping you get the information?* This could serve as a review of the senses and the structures that are responsible for them. Alternatively, you can lead a discussion to review each sense—what it does and what structures are involved.

Embedded Formative Assessment

Critical Juncture Lesson 1.4, Activity 1

Critical Juncture Assessment 1: Writing About How Animals Use Senses

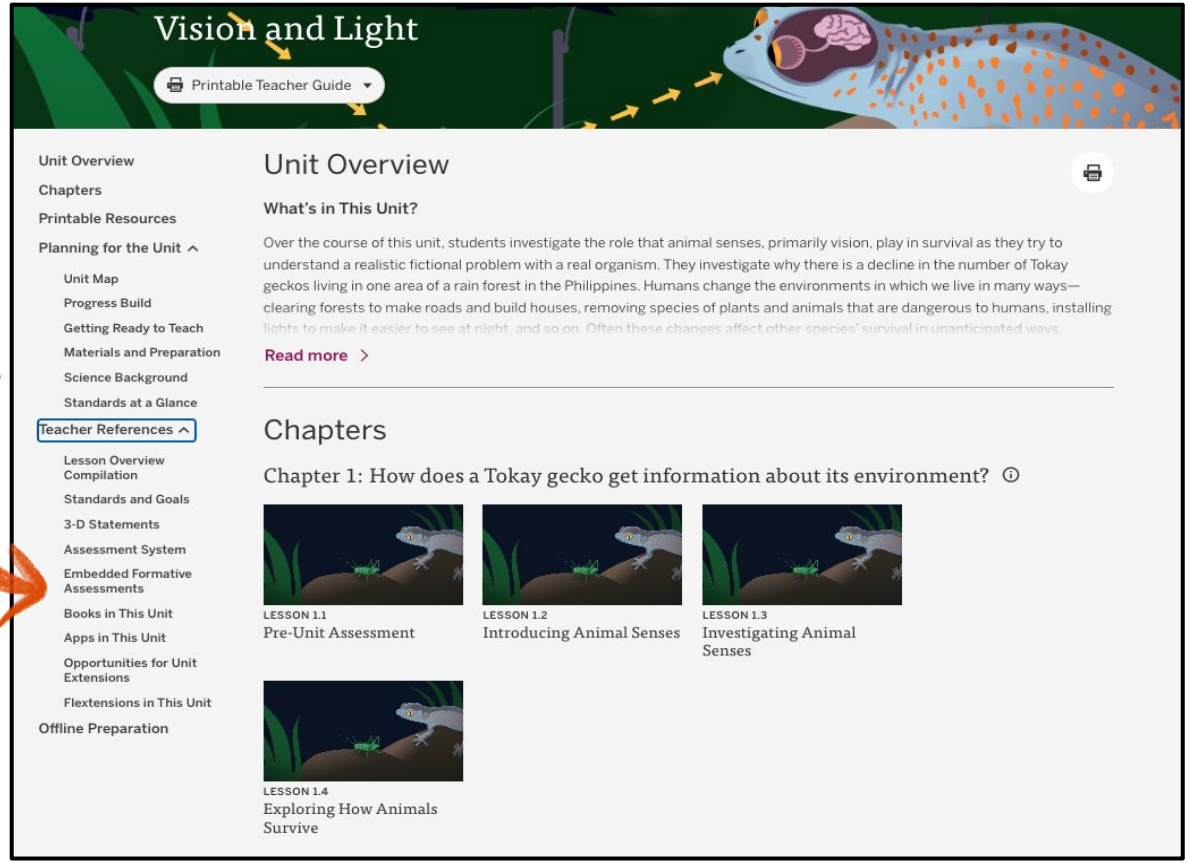
Assess understanding: The purpose of this Critical Juncture is to assess students' understanding of how animals use senses to get information about their environment. At this point in the unit, students should be able to demonstrate their understanding that scent and sound carry information from the environment and that animals have sensory structures, such as a nose and ears, to receive that information. Students should be able to make the connection that being able to receive such information is necessary to fulfill the animal's various needs for survival. Students should be able to identify the different ways in which animals gather information about their environment using different sensory structures. In their responses, look for students to demonstrate this understanding by connecting sensory structures (e.g., nose) to the information they get from the environment (e.g., scents).

Tailor instruction: If students are not yet understanding the various senses that an animal might use to get information about its environment, have them act out what it would be like for the animals in the videos they watched earlier to not be able to use their sensory structures to get information. For example, for the antelope, have students cover their ears in order to not hear well. For the raccoon, have students not be able to use their hands. Without the functions of those structures, have students try to get information about something in the environment (e.g., the classroom) using other senses. Ask students questions such as *What kinds of information are you able to get without this function?* and *What other senses are you using and what structures are helping you get the information?* This could serve as a review of the senses and the structures that are responsible for them. Alternatively, you can lead a discussion to review each sense—what it does and what structures are involved.

Formative Assessments

Work time

Explore the Critical Juncture Assessments

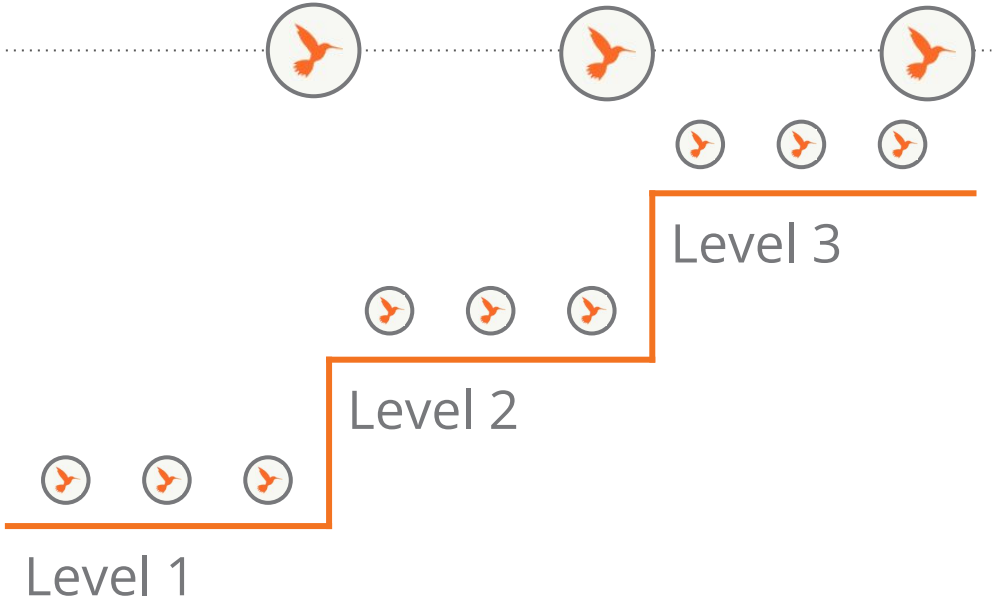


Embedded formative assessments

Reflection

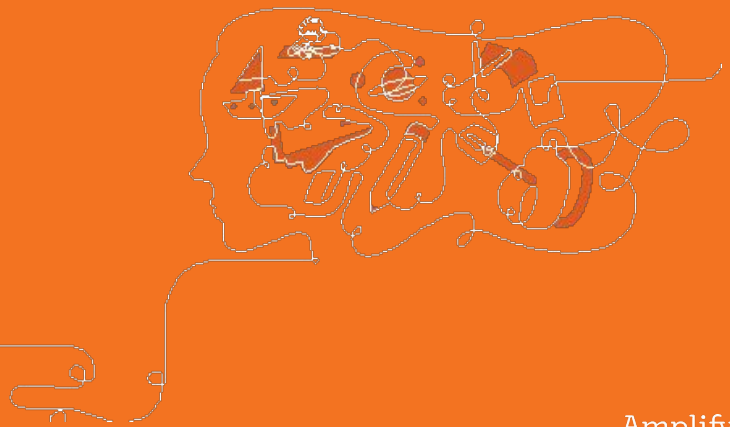
In 1-2 sentences, describe the relationship among:

- Progress Build
- On-the-Fly Assessments
- Critical Juncture Assessments

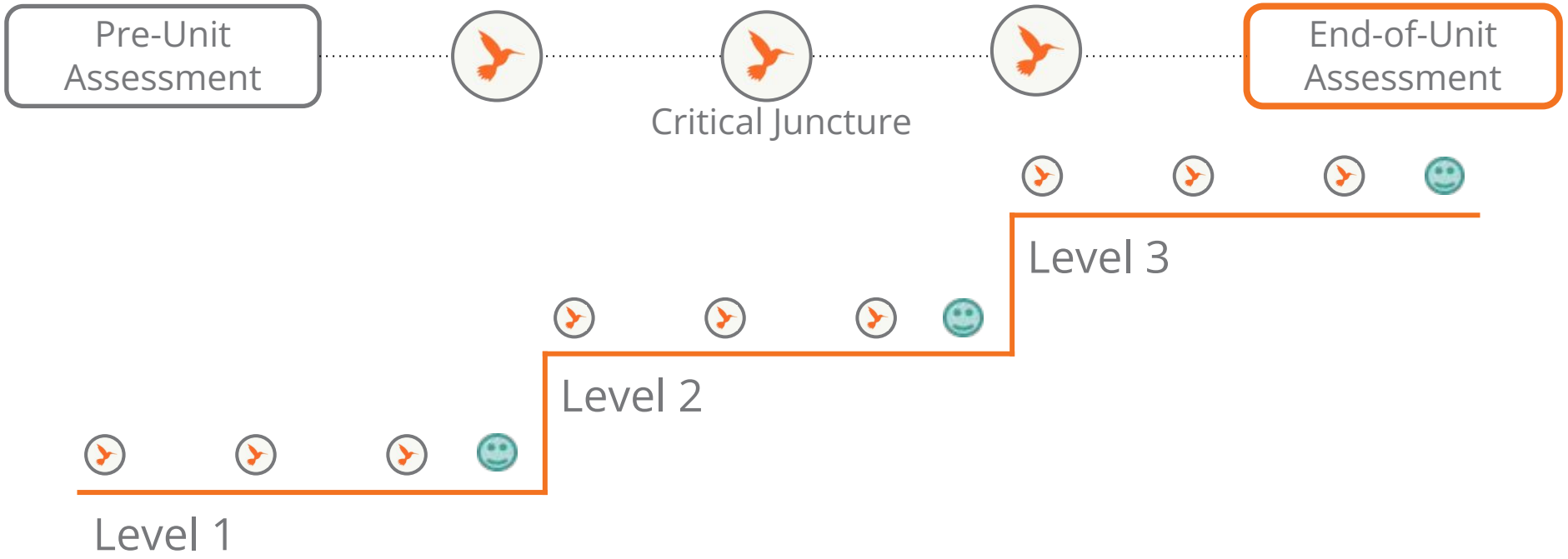


Questions?

End-of-Unit Assessment



K-5 Assessment System



End-of-Unit Assessment

3-dimensional assessment opportunity

- Summative assessment of mastery of science concepts
- Formative assessment of Science and Engineering Practices

End of Unit Assessments

What are students being asked to do?

How does a Tokay gecko usually see?

Why does more light at night make it hard for it to see?

3 Dimensional Learning

Science and Engineering Practices

- Practice 6: Constructing Explanations and Designing Solutions
  - CEDS-E1: Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
- Practice 8: Obtaining, Evaluating, and Communicating Information
  - INFO-E5: Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and may include tables, diagrams, and charts.

Disciplinary Core Ideas

- LS1.A: Structure and Function:
  - LS1.A-E1: ...animals have both internal and external structures that serve various functions in... survival [and] behavior... (4-LS1-1)
- LS1.D: Information Processing:
  - LS1.D-E1: Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)
- PS4.B: Electromagnetic Radiation:
  - PS4.B-E1: An object can be seen when light reflected from its surface enters the eyes. (4-PS4-2)

Crosscutting Concepts

- Structure and Function
  - SF-E2: Substructures have... parts that serve functions.

End of Unit Assessment Rubric

Pgs. 13=-16

Note that while the examples provided in this rubric accurately reflec
unit, students may provide alternate accounts that, if causal and exp
productive moves toward developing the practice of constructing a s

Rubric 1: Assessing Students' Performance of the Practices of C Obtaining, Evaluating, and Communicating I	
Criteria	**Description of level**
Causal and explanatory Does the explanation go beyond, or add to, what can be observed to explain why more light made it harder for the Tokay gecko to see?	The writing does not go beyond, or add to, what w *why* more light made it harder for the Tokay gecko Possible feedback: *You described the Tokay gecko better in low light, but how does a gecko see? Why affect an animal's ability to see?*
	The writing goes beyond describing that Tokay ge the highway lights but cannot see with them to pr • How light allows geckos to see (e.g., the light the gecko's eyes, which send information to th processed). OR • Why the amount of light affects whether or nc see (e.g., if there is too much light, the gecko's respond too much and the brain can't form a Possible feedback: *You gave a partial explanation light carries information to their eyes, which send i where it can be processed), but can you explain m can't see (e.g., why more light would make it hard f*
	The writing goes beyond describing that Tokay ge the highway lights but cannot see with them to pr • How light allows geckos to see (e.g., the light the gecko's eyes, which send information to th processed). AND • Why the amount of light affects whether or nc see (e.g., if there is too much light, the gecko's respond too much and the brain can't form a Possible feedback: *Is there anything else that coul understand why the Tokay gecko cannot see when are there?*

Rubric 1: Assessing Students' Performance of the Practices Obtaining, Evaluating, and Communicati	
Criteria	**Description of level**
Communicates information clearly Is the explanation written in a way that will allow the audience to understand it?	Questions to guide review of student writing: In assigning a level for this criterion, take into supports and expectations emphasized in yo a score from 0–2, but you may adjust the sca instructional priorities. Note that not all quest for your classroom, and/or you may choose t • Does the explanation begin with a topic s summarizes the explanation and answers • If you ask, can the student describe how explanation appropriate to the audience Conservation Group)? • Is the explanation logically organized in a • Does the explanation use appropriate sci unit (e.g., *light receptors, brain, process*)?

Rubric 2: Assessing Students' Understanding of Science Ideas Encounter
This rubric applies to both the writing and the diagram on the End-of-Unit Wr
More Light Makes It Harder for a Tokay Gecko to See student sheet. Rubric 2
students' explanations (writings and diagrams) are consistent with the releva
they have encountered in the unit. This rubric may be used summatively by t
science idea demonstrated, as described below.

Rubric 2: Assessing Students' Understanding of Science Ideas Enco	
Criteria	**Questions to keep in mind**
Grounded in evidence Is the explanation consistent with the relevant science ideas that students have experienced so far? (Note that students need not explicitly cite classroom examples or data, as long as their descriptions are consistent with the science ideas learned.)	Does the student show understanding that an animal see from a source reflects off an object and enters the animal Evidence could include: • A diagram that shows the path of light from the highw moon, to the prey, to the gecko's eyes.
	Does the student show understanding of how the eye and together to allow animals to see? (1 point) Evidence could include: • An explanation describing that when a gecko sees, lig eye where light receptors respond and send informati which processes the information to form an image.
	Does the student show understanding that light receptors different sensitivities, and therefore different animals are in different amounts of light? (1 point) Evidence could include: • An explanation describing that additional light from th lights results in too much light for the type of receptor has. The brain can no longer form a clear image from the receptors are sending. Note: It's not important that students be able to name "hi light receptors. Rather, look for their understanding that light receptors require different amounts of light in order form a clear image.
	Total (0–3)

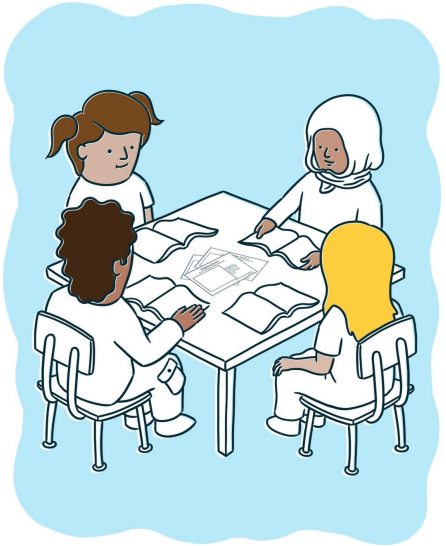
Rubric 3: Assessing Students' Understanding of the Crosscutting Concept of Structure and Function
This rubric is specific to the understanding demonstrated in students' scientific explanations (Part 2) of the End-of-Unit Writing: Explaining Why More Light Makes It Harder for a Tokay Gecko to See student sheet. Rubric 3 considers how well students are able to apply the crosscutting concept of Structure and Function to a specific phenomenon. This rubric may be used summatively by tallying the points for each application demonstrated, as described below.

Rubric 3: Assessing Students' Understanding of the Crosscutting Concept of Structure and Function		
Criteria	**Questions to keep in mind**	**Score**
Grounded in evidence Does the explanation include a description of structures with substructures that serve functions?	Does the explanation describe the structure of the eye and how it functions to get light information from the environment? (1 point)	
	Does the explanation describe light receptors as substructures of the eye and how they respond to light with the function of sending information to the brain? (1 point)	
	Total (0–2)	

End-of-Unit Assessment

Work time

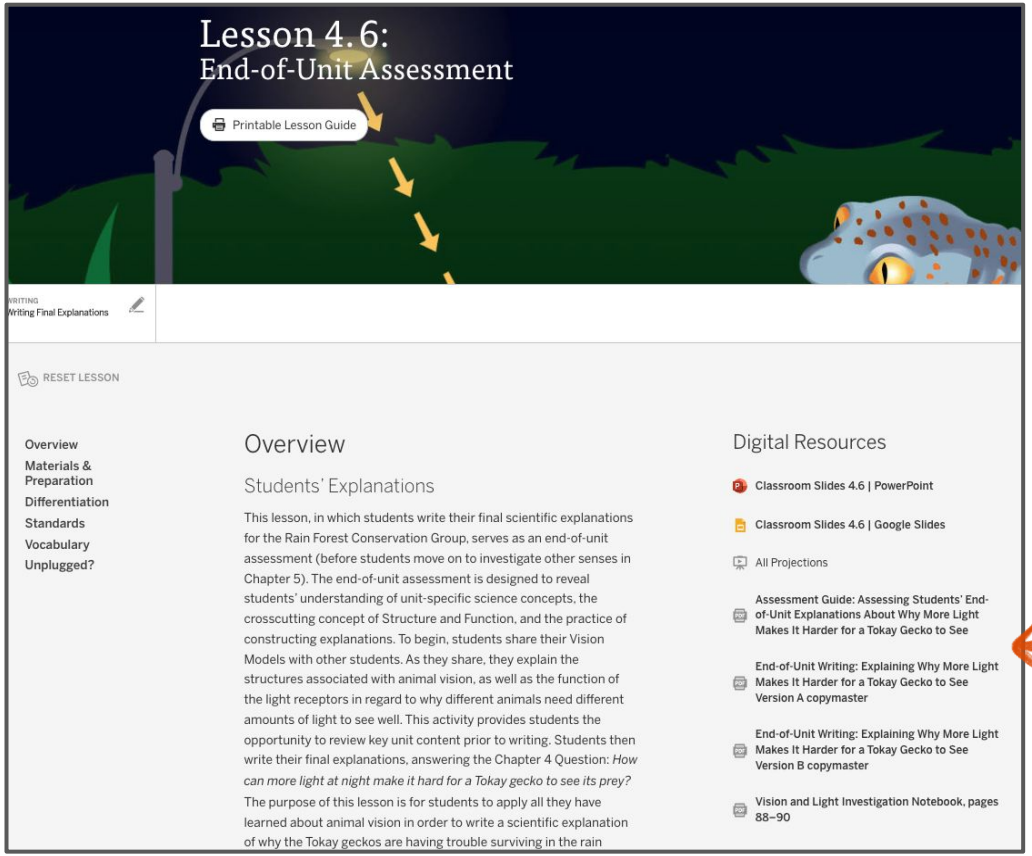
- Open your Participant Notebook to page 12.
- Score the three student responses (page 16) with rubric 2 only (science ideas).
- Come together with your group and discuss your scores.
- Share out



End-of-Unit Assessment

Vision and Light

- Go to the The **End-of-Unit Writing** and the **End-of Unit Assessment Guide** on the lesson page
- Compare your scores with the student responses in the guide.
- Discuss with your group if there were any differences.

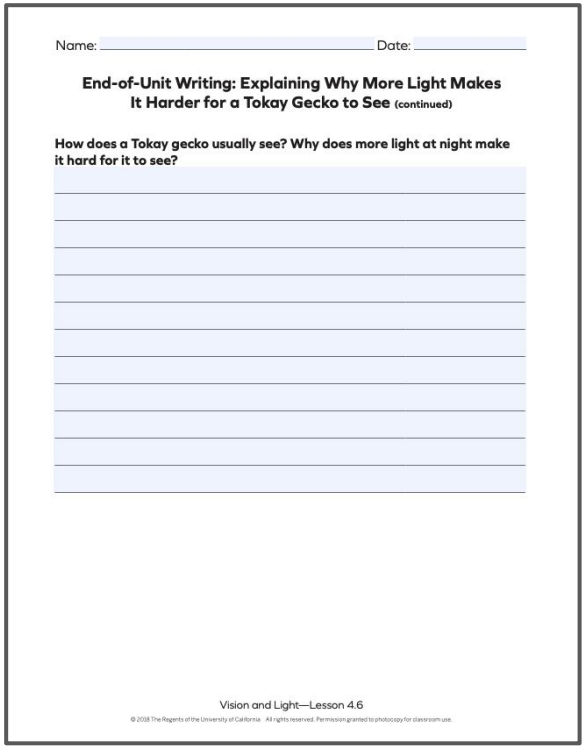


End-of-Unit Assessment

Form A and B

Digital Resources

- Classroom Slides 4.6 | PowerPoint
- Classroom Slides 4.6 | Google Slides
- All Projections
- Assessment Guide: Assessing Students' End-of-Unit Explanations About Why More Light Makes It Harder for a Tokay Gecko to See
- End-of-Unit Writing: Explaining Why More Light Makes It Harder for a Tokay Gecko to See Version A copymaster
- End-of-Unit Writing: Explaining Why More Light Makes It Harder for a Tokay Gecko to See Version B copymaster
- Vision and Light Investigation Notebook, pages 88–90

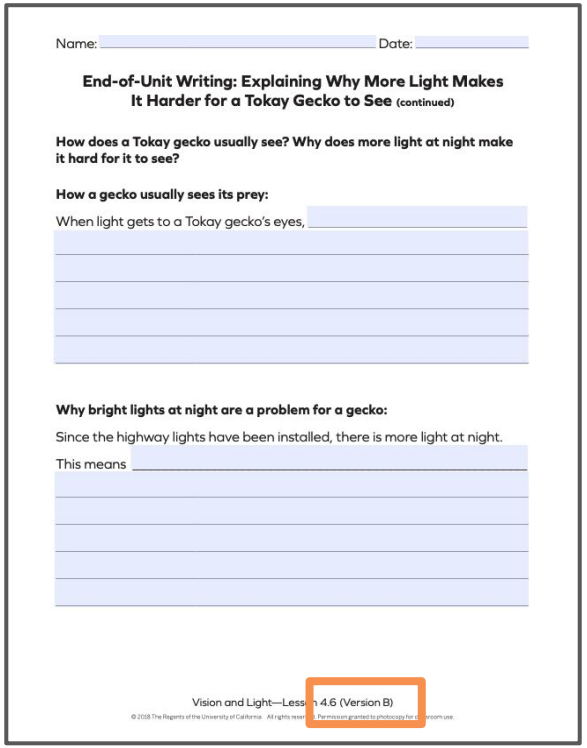


Name: _____ Date: _____

End-of-Unit Writing: Explaining Why More Light Makes It Harder for a Tokay Gecko to See (continued)

How does a Tokay gecko usually see? Why does more light at night make it hard for it to see?

Vision and Light—Lesson 4.6



Name: _____ Date: _____

End-of-Unit Writing: Explaining Why More Light Makes It Harder for a Tokay Gecko to See (continued)

How does a Tokay gecko usually see? Why does more light at night make it hard for it to see?

How a gecko usually sees its prey:

When light gets to a Tokay gecko's eyes, _____

Why bright lights at night are a problem for a gecko:

Since the highway lights have been installed, there is more light at night.

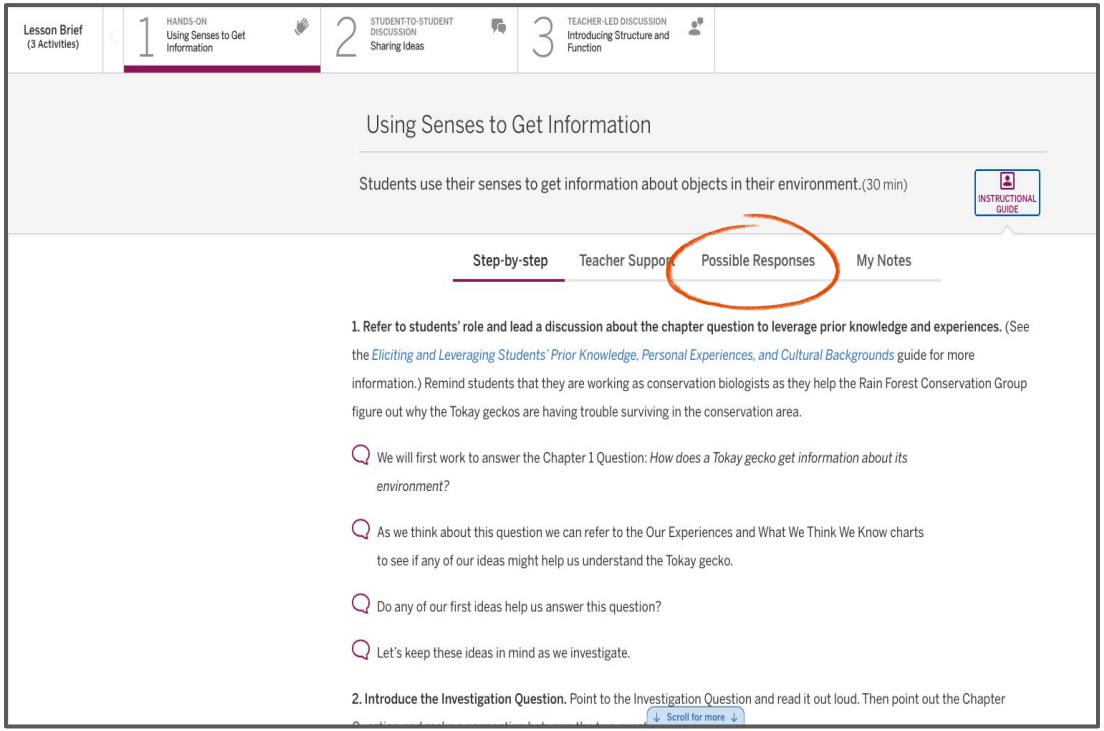
This means _____

Vision and Light—Lesson 4.6 (Version B)

Formative assessment information

Possible student responses

- Within assessments:
  - “Look fors” (OtF)
  - “Assess Understanding” (CJ)
- Possible responses within the Instructional Guide
- Digital resources
  - Assessment Guides
  - Teacher References

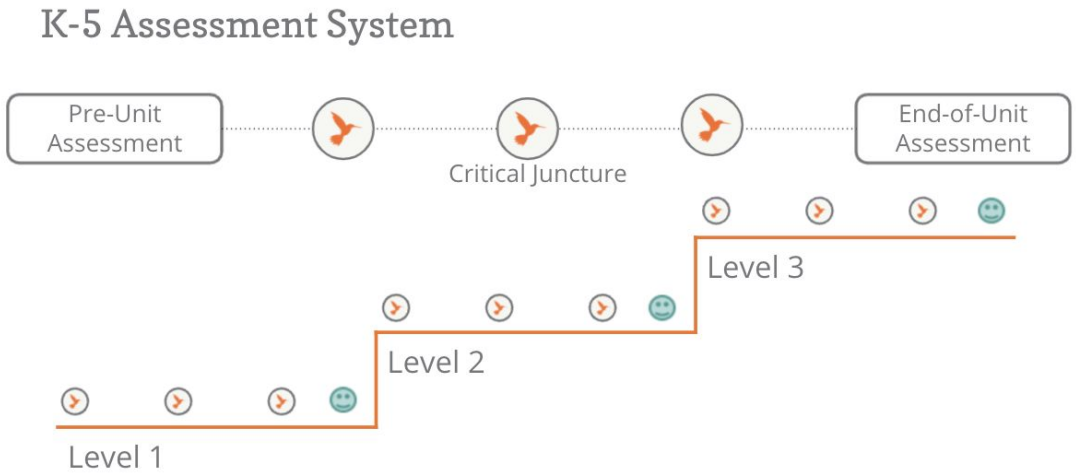


Assessment System

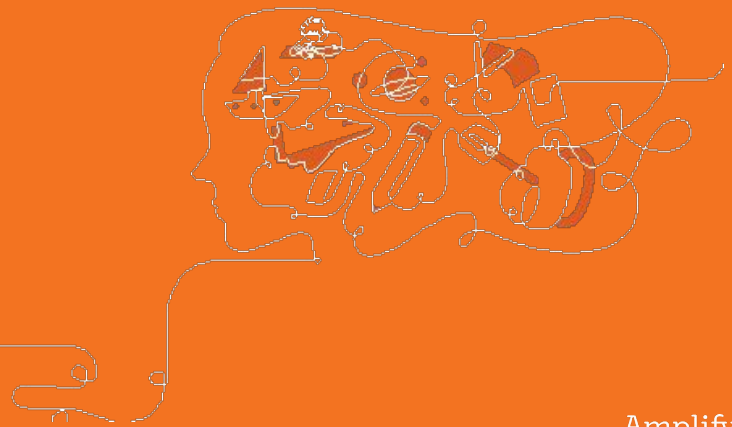
Reflection

How do the Progress Build and assessments work as a **system**?

What are the benefits of this system for students? For teachers?



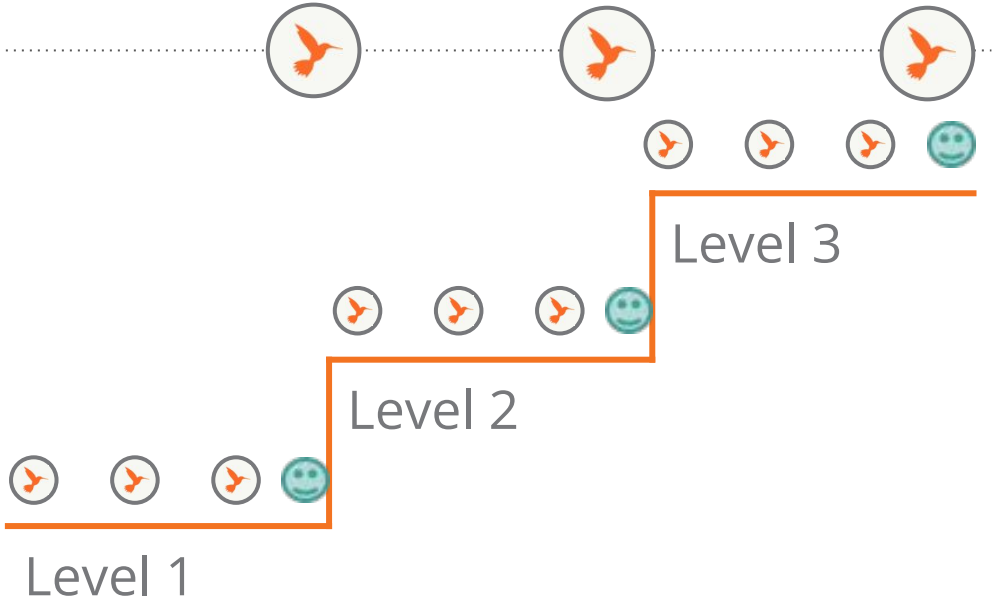
Lunch Break



Additional formative assessment information

Student Self-Assessments

- End of each chapter
- Grades K-1: Pair Share activity
- Grades 2-5: Independent Investigation Notebook activity

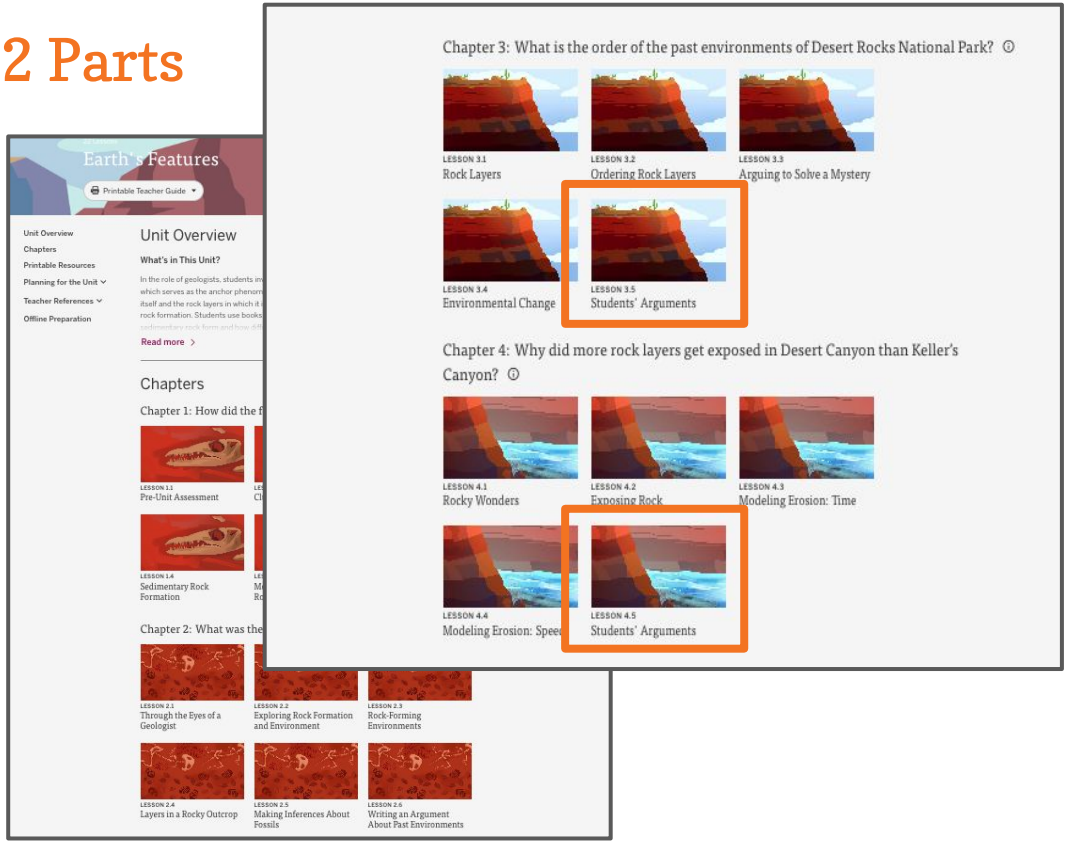


Additional assessment information

End of Unit Assessments: 2 Parts

End of Unit Assessment Part 1

End of Unit Assessment Part 2



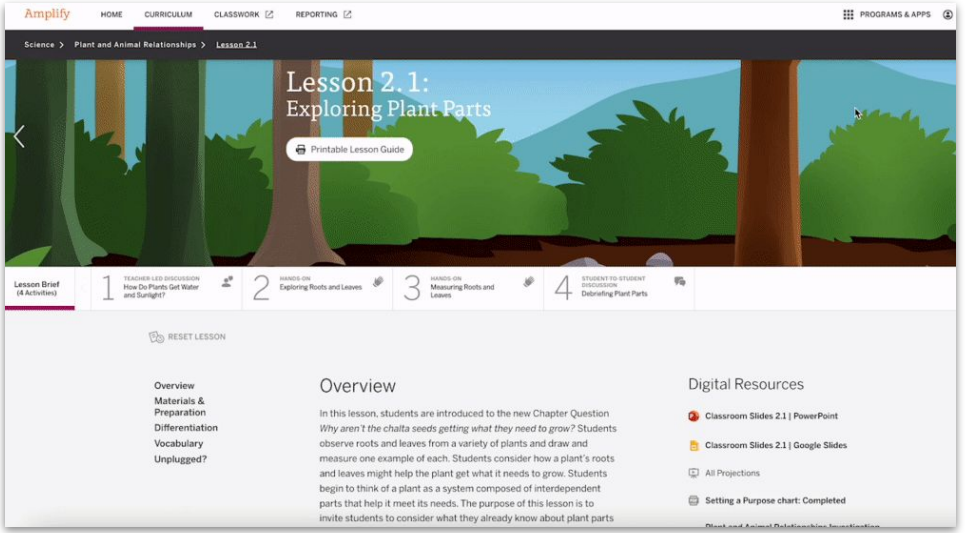
Unit 3: Earth's Features

Questions?

Resources for NGSS progress monitoring

NGSS Benchmark assessments

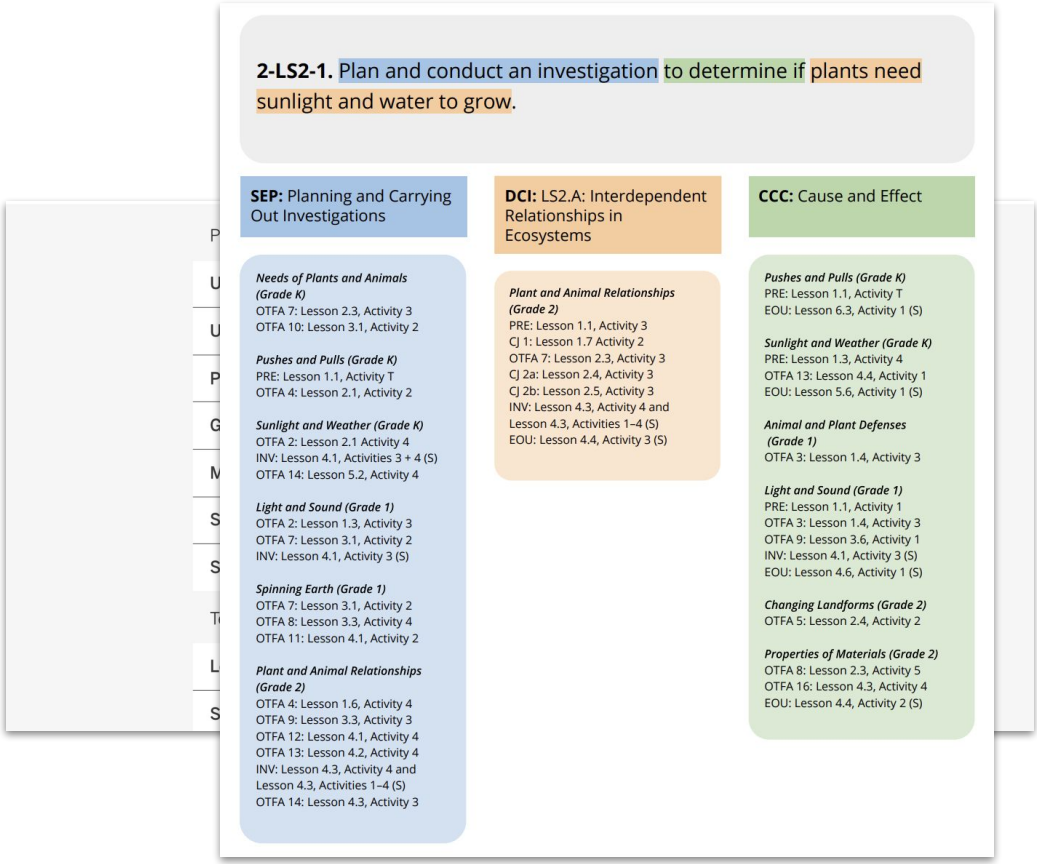
- Accessible in the Global Navigation menu
- Grades 3-5
- 4 assessments per grade



Resources for NGSS progress monitoring

3D Assessment Objectives

- Located in the Unit Guide
- Identifies where each dimension of the target Performance Expectations are assessed in the unit, in the grade, or in the grade-band.



2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

SEP: Planning and Carrying Out Investigations

Needs of Plants and Animals (Grade K)
OTFA 7: Lesson 2.3, Activity 3
OTFA 10: Lesson 3.1, Activity 2

Pushes and Pulls (Grade K)
PRE: Lesson 1.1, Activity T
OTFA 4: Lesson 2.1, Activity 2

Sunlight and Weather (Grade K)
OTFA 2: Lesson 2.1 Activity 4
INV: Lesson 4.1, Activities 3 + 4 (S)
OTFA 14: Lesson 5.2, Activity 4

Light and Sound (Grade 1)
OTFA 2: Lesson 1.3, Activity 3
OTFA 7: Lesson 3.1, Activity 2
INV: Lesson 4.1, Activity 3 (S)

Spinning Earth (Grade 1)
OTFA 7: Lesson 3.1, Activity 2
OTFA 8: Lesson 3.3, Activity 4
OTFA 11: Lesson 4.1, Activity 2

Plant and Animal Relationships (Grade 2)
OTFA 4: Lesson 1.6, Activity 4
OTFA 9: Lesson 3.3, Activity 3
OTFA 12: Lesson 4.1, Activity 4
OTFA 13: Lesson 4.2, Activity 4
INV: Lesson 4.3, Activity 4 and Lesson 4.3, Activities 1–4 (S)
OTFA 14: Lesson 4.3, Activity 3

DCI: LS2.A: Interdependent Relationships in Ecosystems

Plant and Animal Relationships (Grade 2)
PRE: Lesson 1.1, Activity 3
CJ 1: Lesson 1.7 Activity 2
OTFA 7: Lesson 2.3, Activity 3
CJ 2a: Lesson 2.4, Activity 3
CJ 2b: Lesson 2.5, Activity 3
INV: Lesson 4.3, Activity 4 and Lesson 4.3, Activities 1–4 (S)
EOU: Lesson 4.4, Activity 3 (S)

CCC: Cause and Effect

Pushes and Pulls (Grade K)
PRE: Lesson 1.1, Activity T
EOU: Lesson 6.3, Activity 1 (S)

Sunlight and Weather (Grade K)
PRE: Lesson 1.3, Activity 4
OTFA 13: Lesson 4.4, Activity 1
EOU: Lesson 5.6, Activity 1 (S)

Animal and Plant Defenses (Grade 1)
OTFA 3: Lesson 1.4, Activity 3

Light and Sound (Grade 1)
PRE: Lesson 1.1, Activity 1
OTFA 3: Lesson 1.4, Activity 3
OTFA 9: Lesson 3.6, Activity 1
INV: Lesson 4.1, Activity 3 (S)
EOU: Lesson 4.6, Activity 1 (S)

Changing Landforms (Grade 2)
OTFA 5: Lesson 2.4, Activity 2

Properties of Materials (Grade 2)
OTFA 8: Lesson 2.3, Activity 5
OTFA 16: Lesson 4.3, Activity 4
EOU: Lesson 4.4, Activity 2 (S)

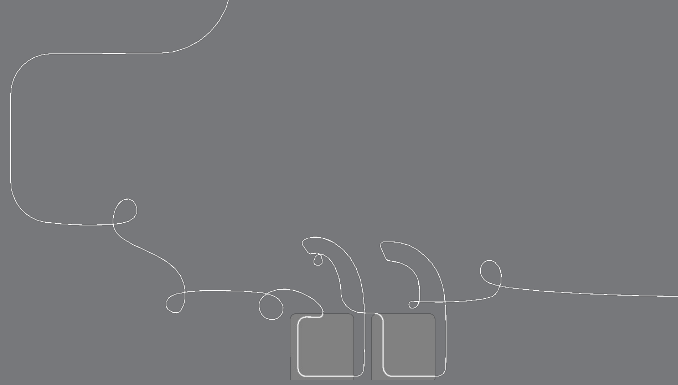
Generating grades

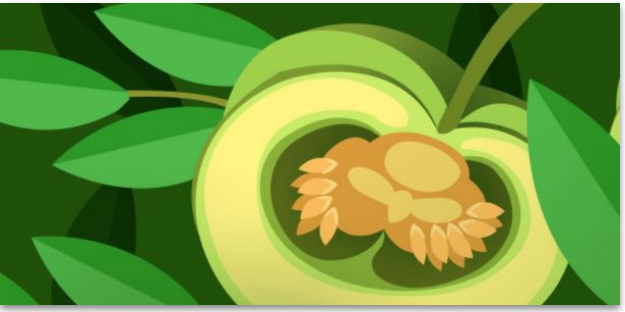
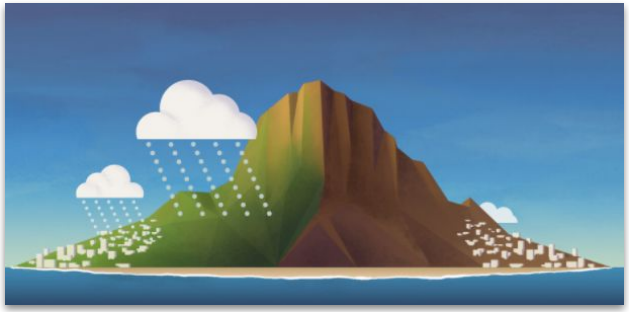
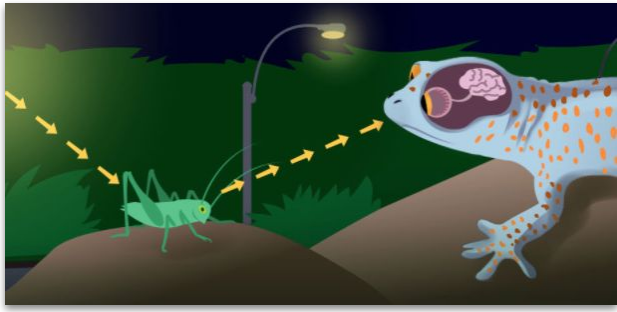
Group collaborative discussion

What are your district's grading requirements for science?

How will you use Amplify Science assessments to generate grades?

Questions?



Plan for the day

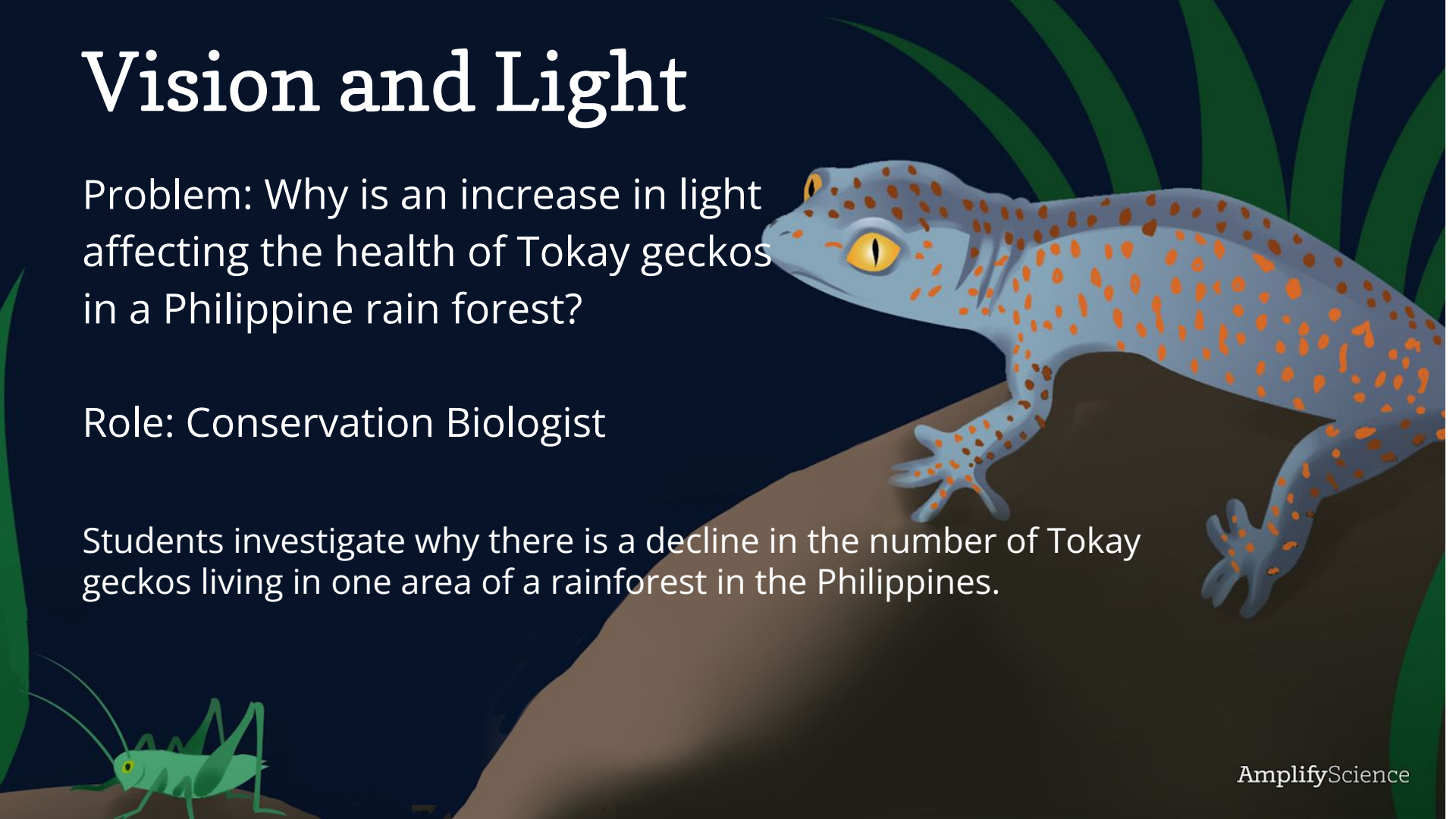
- Introduction
- Assessment System
- Progress Build
- Assessments
- Model Lesson
- Planning
- Closing

Vision and Light

Problem: Why is an increase in light affecting the health of Tokay geckos in a Philippine rain forest?

Role: Conservation Biologist

Students investigate why there is a decline in the number of Tokay geckos living in one area of a rainforest in the Philippines.



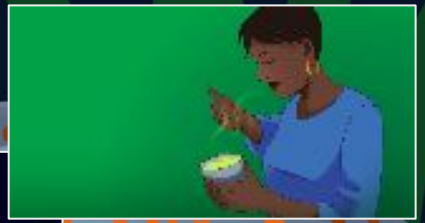
Coherent Storylines

How does the Tokay gecko get information about its environment?

How does light allow a Tokay gecko to see its prey?

How does a Tokay gecko know that it is looking at its prey?

How could more light at night make it hard for a Tokay gecko to see its prey?



How do our senses help us understand our environment?

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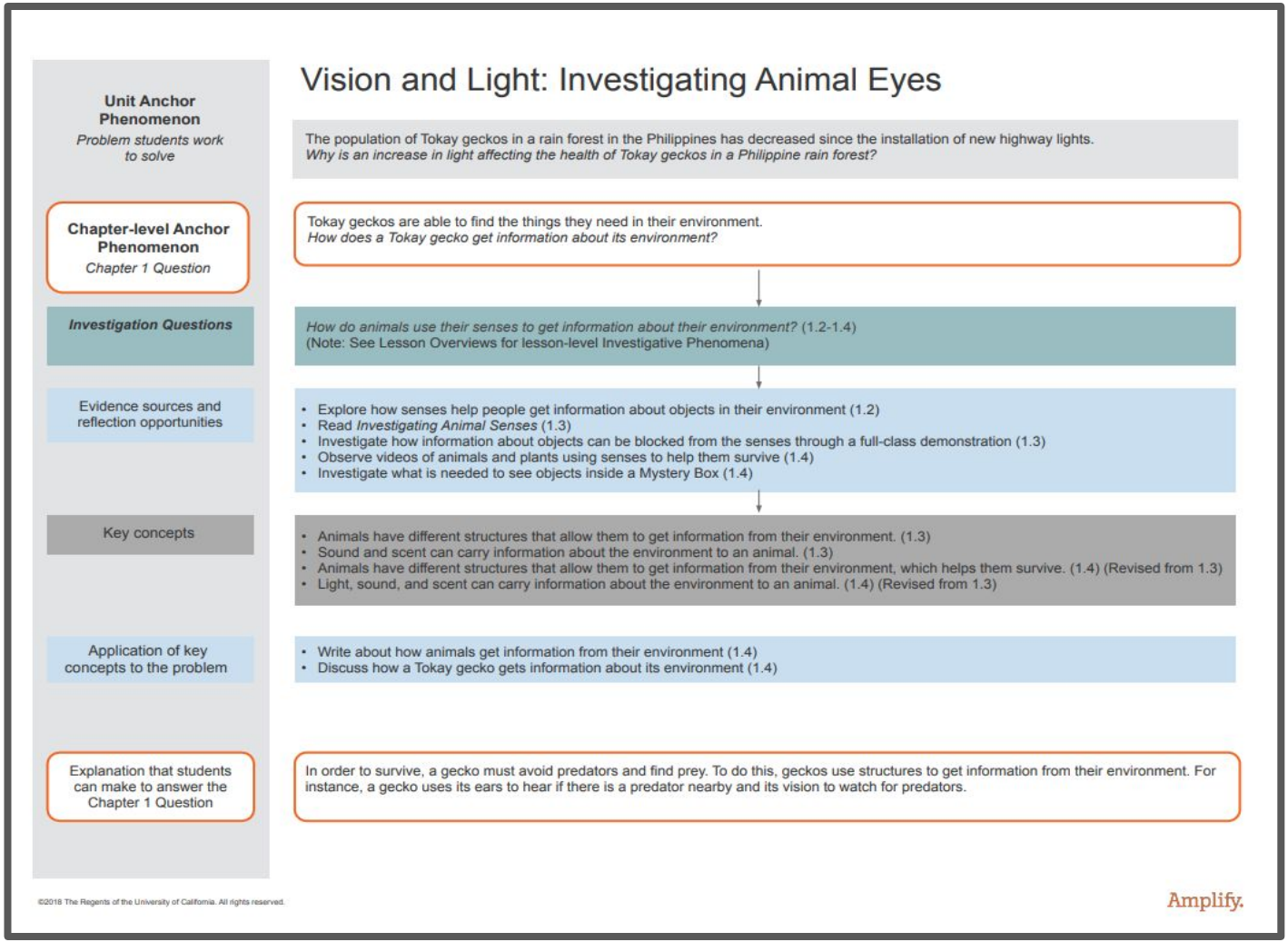
Coherence Flowchart

Chapter 1



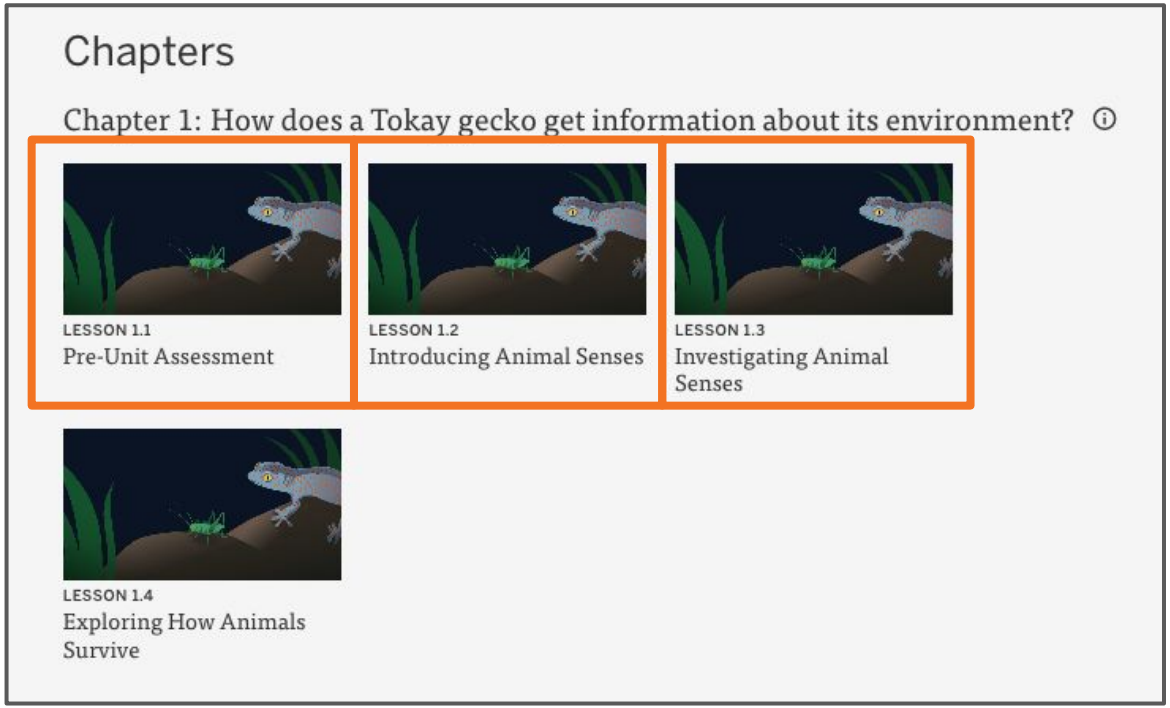
Vision and Light

Leading up to our model lesson

L 1.1-Pre-Unit Assessment and Introduction to Phenomenon

L 1.2-Exploring how senses help people get information about objects in their environment.

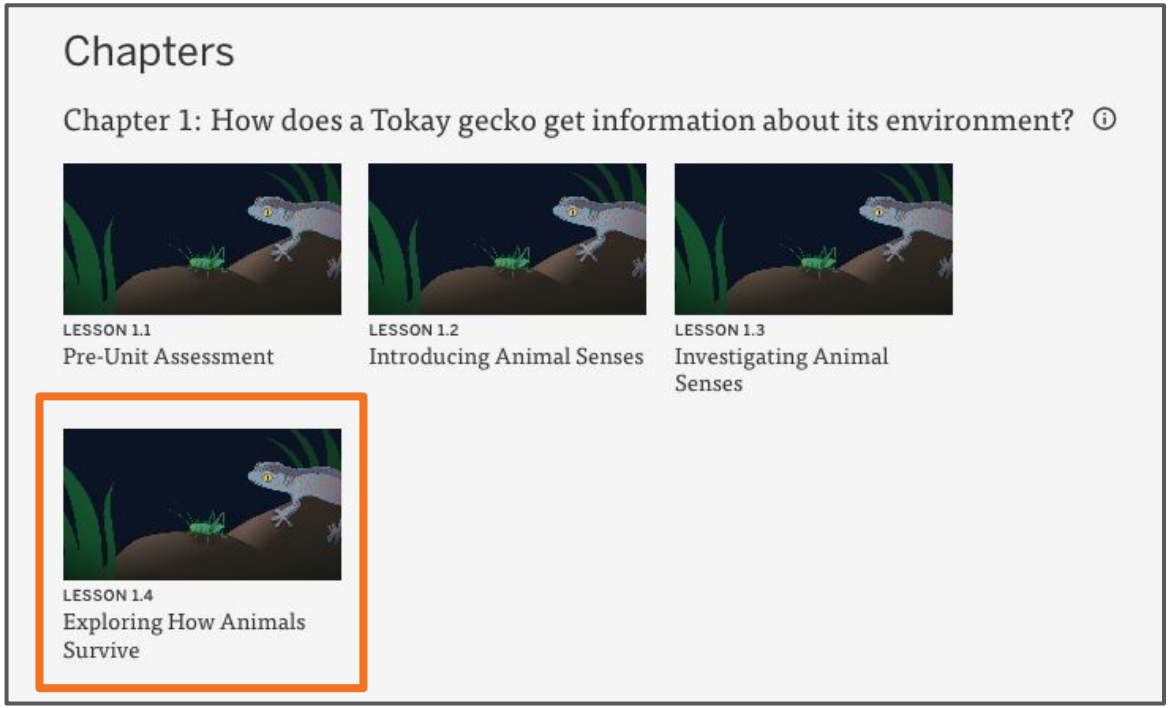
L 1.3-Reading *Investigating Animal Senses* and investigating how information about objects can be blocked from the senses through a full-class demonstration



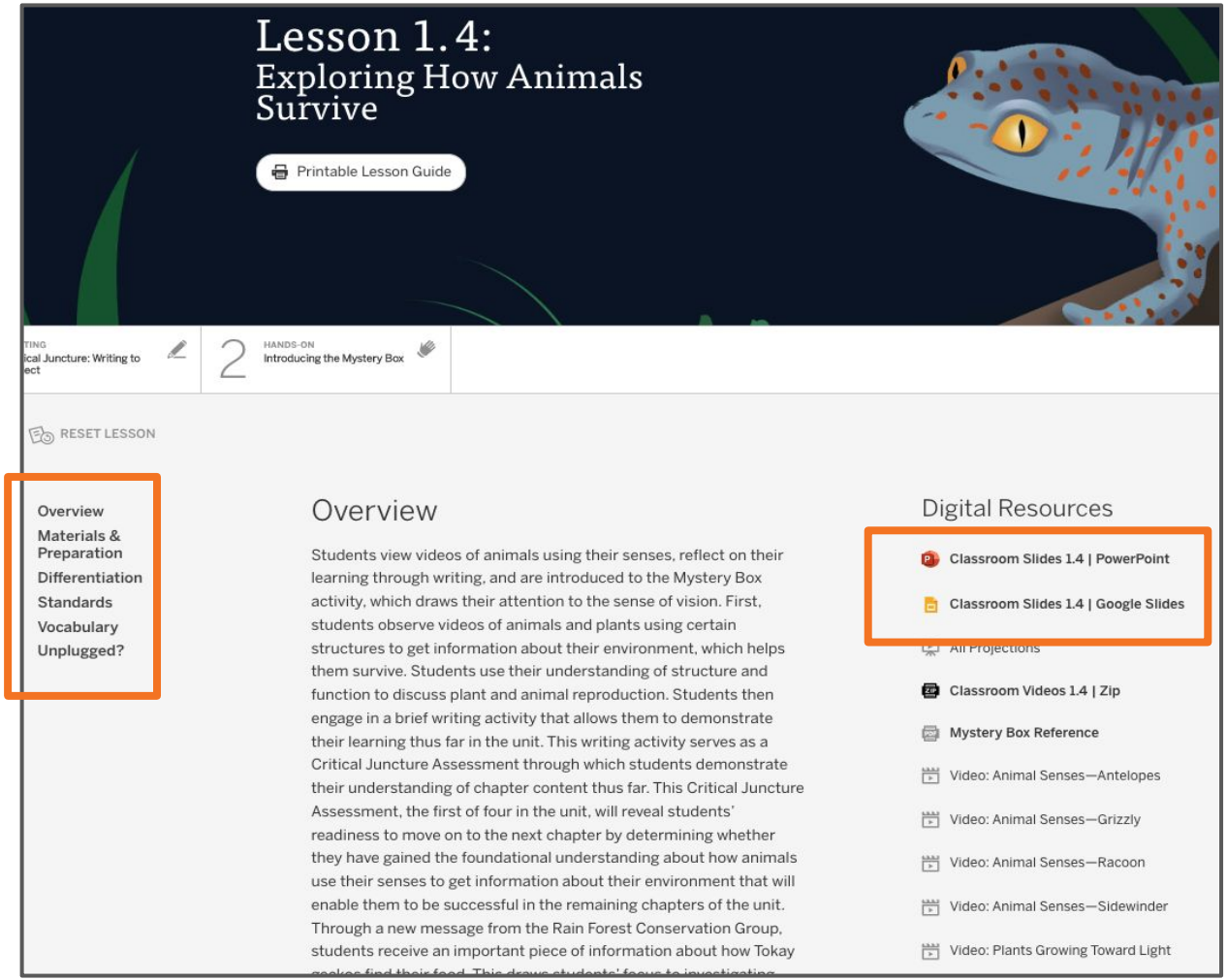
Vision and Light

Model lesson 1.4

- Observing videos of animals and plants using seses to help them survive.
- Investigating what is needed to see objects inside a Mystery Box.



The Lesson Brief and Classroom Slides



Vision and Light

Materials & Preparation

Materials

For the Classroom Wall

- vocabulary: *vision*
- key concept: *Animals have different structures that allow them to get information from their environment, which helps them survive.*
- key concept: *Light, sound, and scent can carry information about the environment to an animal.*
- Unit Question: *How do animals use vision and other senses to survive in their environment?*

For the Class

- masking or packing tape, approximately 2" wide*
- box cutter*
- optional: black paper or opaque tape*
- optional: Chapter 1 Home Investigation: Asking Questions copymaster

For Each Group of Four Students

- 1 cardboard box
- 1 binder clip

For Each Student

- *Vision and Light* Investigation Notebook (pages 14–19)
- optional: 1 copy of the Chapter 1 Home Investigation: Asking Questions student sheet

*teacher provided

Immediately Before the Lesson

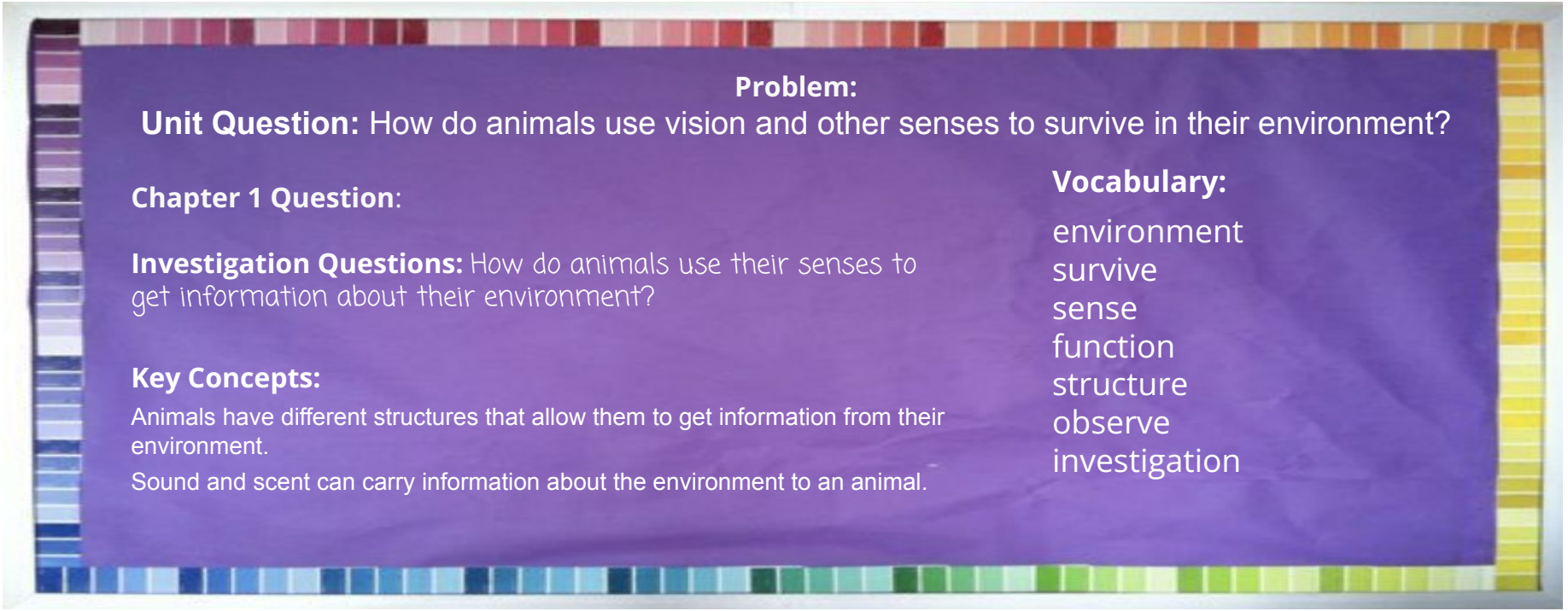
1. **Write the Investigation Question on the board.** If the Investigation Question from Lesson 1.1 was erased, rewrite "How do animals use their senses to get information about their environment?"
2. **Write the reflection questions for the Animal Sense videos on the board:**
   - "How did the animal get information about what was in its environment?"
   - "What structure did it use?"
   - "How did the information from the environment get to the animal?"
   - "How will the animal use that information to survive?"
3. **In a separate section of your board, write the reflection questions for the Plant video:**
   - "How did the plants get information about what was in its environment?"
   - "How will the plants use that information to survive?"
4. **Have on hand the following materials:**
   - materials for classroom wall
   - prepared Mystery Boxes
   - masking tape
   - optional: copies of the Chapter 1 Home Investigation: Asking Questions student sheet

Digital Resources

- **Classroom Slides 1.4 | PowerPoint**
- **Classroom Slides 1.4 | Google Slides**
- All Projections
- **Classroom Videos 1.4 | Zip**
- **Mystery Box Reference**
- Video: Animal Senses—Antelopes
- Video: Animal Senses—Grizzly
- Video: Animal Senses—Racoon
- Video: Animal Senses—Sidewinder
- Video: Plants Growing Toward Light
- **Optional: Chapter 1 Home Investigation: Asking Questions copymaster**
- **Vision and Light Investigation Notebook, pages 14–19**
- **Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds**

Vision and Light

Classroom Wall - (Before the Lesson 1.4)



Grade 4 | Vision and Light

Lesson 1.4: Exploring How Animals Survive

AmplifyScience

Activity 1

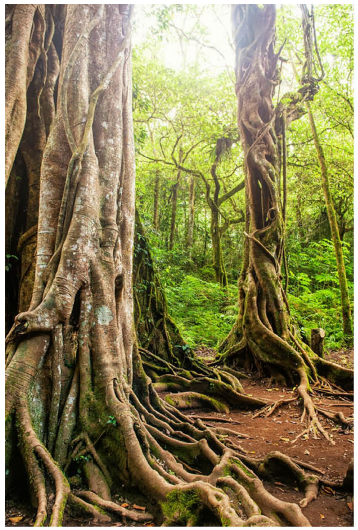
Critical Juncture: Writing to Reflect

Remember that we are investigating this question:

How do animals use their senses to get information about their environment?

How do some of the animals you read about in the book get **information** from their **environment**?

Some animals get information from _____.



We will investigate both **animal and plant senses.**

You will observe videos of different animals and plants using their senses to get information about the environment.

Reflection Questions for Animal Videos

- How does the animal get information about what is in its environment?
- What structure does it use?
- How does the information from the environment get to the animal?
- How will the animal use that information to survive?

Why is it important for animals to get information from the environment?

It is important for animals to get information from the environment because_____.

Key Concept

Animals have different structures that allow them to get information from their environment, which helps them survive.

Kangaroo Structure And Survival

Young kangaroos in pouches

What do you think the **function** of a kangaroo pouch is?

I think the function of the pouch is _____.

How does that function help kangaroos **survive**?

The pouch helps kangaroos survive by _____.

Reflection Questions for Plant Video

- How do the plants get information about what is in their environment?
- How will the plants use that information to survive?

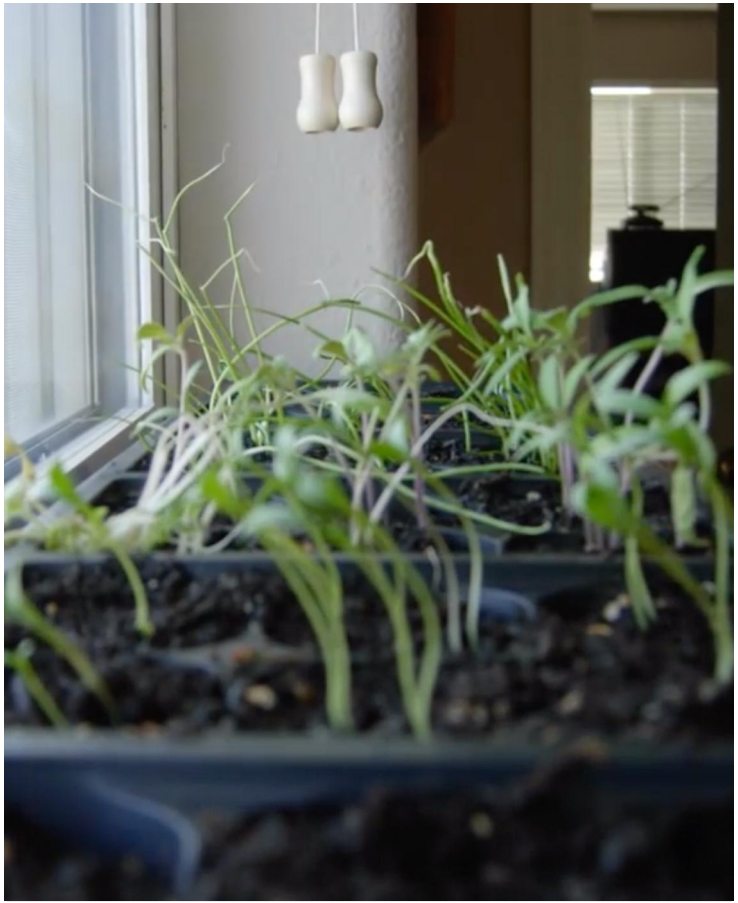
Do you think **plants** have **senses**?

What **evidence** do you have?

The evidence I have is _____.

How could moving toward light be helpful for a plant's **survival**?

It is helpful for the plant's survival by _____.



Plants have **internal structures** that allow them to **sense** and move toward **light**, which they need in order to **survive**.

Plant Structures and Survival

branches

seeds

leaves

roots

What do you think each part does for a plant?

I think _____ does _____.

How does this help the plant **survive**?

_____ helps the plant survive by _____.

leaves

What do you think the **veins** in a leaf do for a plant?

The veins in a leaf _____.

How does this help the plant **survive**?

_____ helps it to survive by _____.

You've been learning about how plant and animal **senses help with survival**.

Understanding this might give you a clue as to why the **Tokay geckos** are having **trouble surviving**.

Name: _____ Date: _____

Writing About How Animals Use Senses

1. Think about the videos you just watched of animals using their senses.
2. Answer the questions below.

The antelopes ran away when they heard their predator. If an antelope couldn't hear well, how could this antelope know when there is a predator nearby?

_____

_____

_____

_____

The raccoon was using its paws to feel for food in the water. If a raccoon couldn't feel things well, how could this raccoon find its food?

_____

_____

_____

_____

Turn to page 15 in your notebooks.

Think about the animal videos you just watched.

Answer the questions.

Lesson 1.4, Activity 1

Critical Juncture Assessment 1: Writing About How Animals Use Senses

Assess understanding: The purpose of this Critical Juncture is to assess students' understanding of how animals use senses to get information about their environment. At this point in the unit, students should be able to demonstrate their understanding that scent and sound carry information from the environment and that animals have sensory structures, such as a nose and ears, to receive that information. Students should be able to make the connection that being able to receive such information is necessary to fulfill the animal's various needs for survival. Students should be able to identify the different ways in which animals gather information about their environment using different sensory structures. In their responses, look for students to demonstrate this understanding by connecting sensory structures (e.g., nose) to the information they get from the environment (e.g., scents).

Tailor instruction: If students are not yet understanding the various senses that an animal might use to get information about its environment, have them act out what it would be like for the animals in the videos they watched earlier to not be able to use their sensory structures to get information. For example, for the antelope, have students cover their ears in order to not hear well. For the raccoon, have students not be able to use their hands. Without the functions of those structures, have students try to get information about something in the environment (e.g., the classroom) using other senses. Ask students questions such as *What kinds of information are you able to get without this function?* and *What other senses are you using and what structures are helping you get the information?* This could serve as a review of the senses and the structures that are responsible for them. Alternatively, you can lead a discussion to review each sense—what it does and what structures are involved.

NGSS connection: This formative assessment reveals student knowledge and use of Disciplinary Core Ideas LS1.A: Structure and Function (LS1.A-E1: . . . animals have . . . external structures that serve various functions in . . . survival [and] behavior . . .) and LS1.D: Information Processing (LS1.D-E1: Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain . . .).

Additional 3-D Assessment Opportunities

To assess student understanding of the practice of Asking Questions and Defining Problems (SEP 1), ask students to come up with questions that someone could investigate to figure out which senses the animals in the videos were using to catch (escape

Name: _____ Date: _____

Writing About How Animals Use Senses

1. Think about the videos you just watched of animals using their senses.
2. Answer the questions below.

The antelopes ran away when they heard their predator. If an antelope couldn't hear well, how could this antelope know when there is a predator nearby?

_____

_____

_____

_____

The raccoon was using its paws to feel for food in the water. If a raccoon couldn't feel things well, how could this raccoon find its food?

_____

_____

_____

_____

Share what you wrote.

Chapter 1 Question

How does a Tokay gecko get information about its environment?

What **new ideas** do you have about how Tokay geckos get information?

How do you think this might **affect their survival?**

I think this affects their survival by _____.

25 MIN

Activity 2

Introducing the Mystery Box

To: Conservation Biologists
From: Rain Forest Conservation Group
Subject: A Problem with the Tokay Geckos

Thank you for the update about how geckos get information from their environment in order to survive. We wanted to let you know we observed that the Tokay geckos rely mostly on their vision to find their prey, such as insects. We hope that this information is useful to you.

We just discussed that finding food is essential to an animal's survival.

What **new ideas** do you have about why the geckos might have **trouble surviving** in their area of the rain forest?

An idea I have about the geckos is _____.

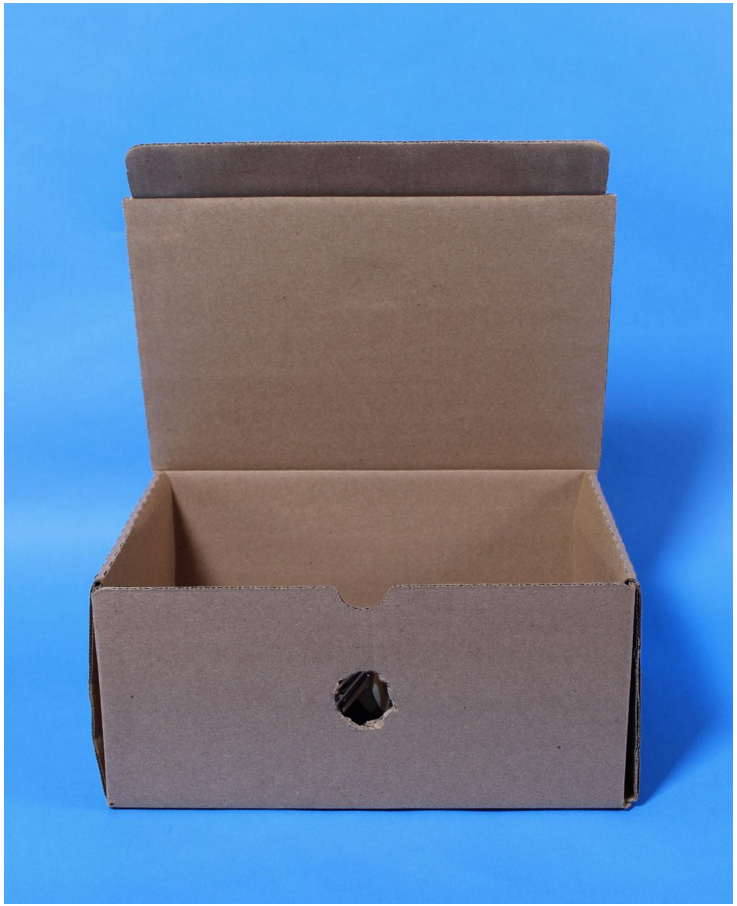
Vocabulary

vision

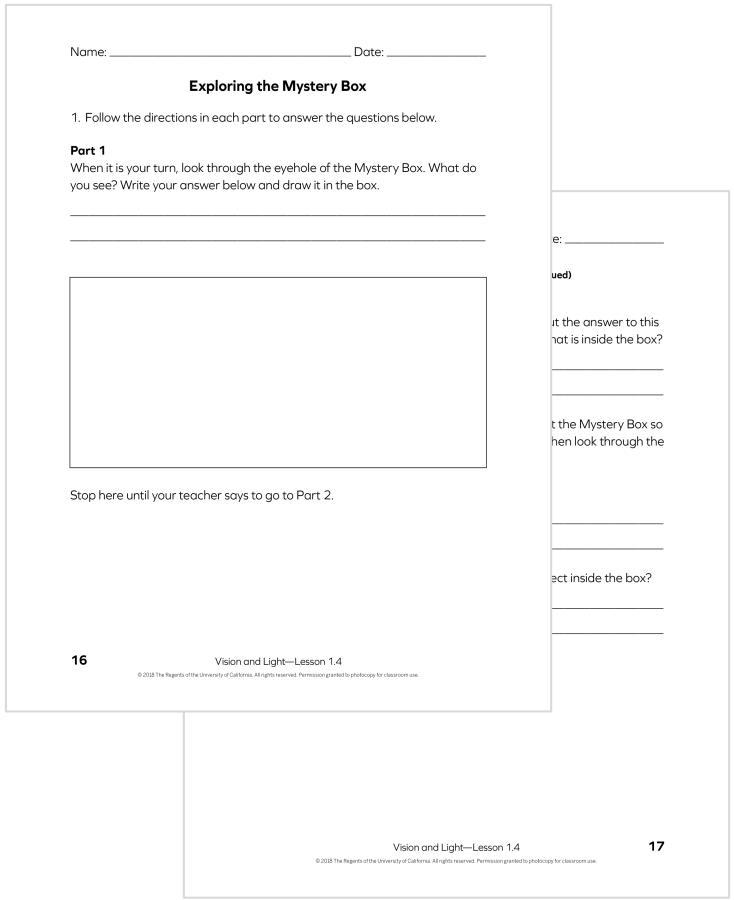
the ability to see

Unit Question

How do animals use vision and other senses to survive in their environment?



This is the **Mystery Box**. It will help us understand more about **vision** and how it can help animals get information about their environment.



Name: _____ Date: _____

Exploring the Mystery Box

1. Follow the directions in each part to answer the questions below.

Part 1

When it is your turn, look through the eyehole of the Mystery Box. What do you see? Write your answer below and draw it in the box.

_____

_____

Stop here until your teacher says to go to Part 2.

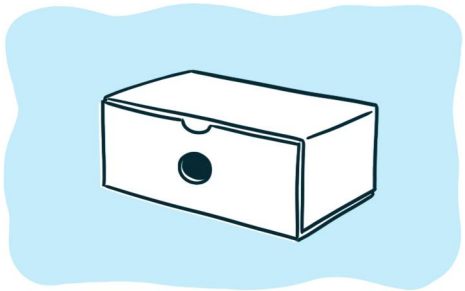
16 Vision and Light—Lesson 1.4

Vision and Light—Lesson 1.4 17

Turn to pages 16–17 in your notebooks.

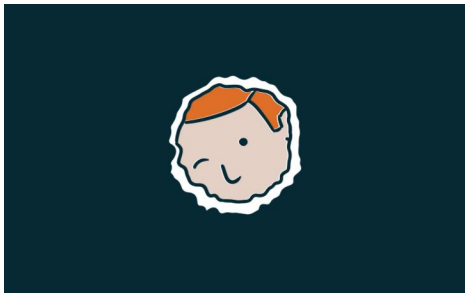
You will work in groups to figure out what you need in order to see your "food" in the box.

Exploring the Mystery Box: Part 1



Step 1

Keep the box flat on the table and **leave it closed.**



Step 2

When it is your turn, **look through the eyehole** of the Mystery Box.

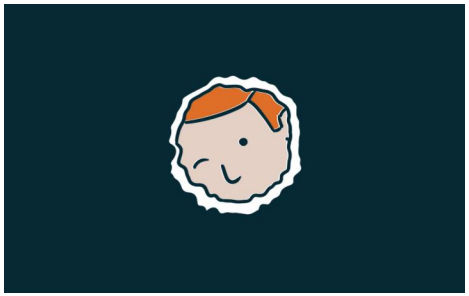
Step 3

Write or draw what you see on page 16 in your notebook. Wait for the signal to move on to Part 2.

Exploring the Mystery Box: Part 2

Step 1

Discuss the question **What do you need in order to see the "food" that is inside the box?**



Step 2

Decide what one thing you will change about the Mystery Box so you can see what is inside. **Make this change**. Then look through the eyehole.

Step 3

Answer the questions on page 17 in your notebook.

What did you see when you first looked through the eyehole? Could you see what was inside?

At first, I saw _____.

What did you need in order to see your “food” inside the box?

I needed _____ to see my food inside the box.

What kind of **information** could you get about the object inside the box?

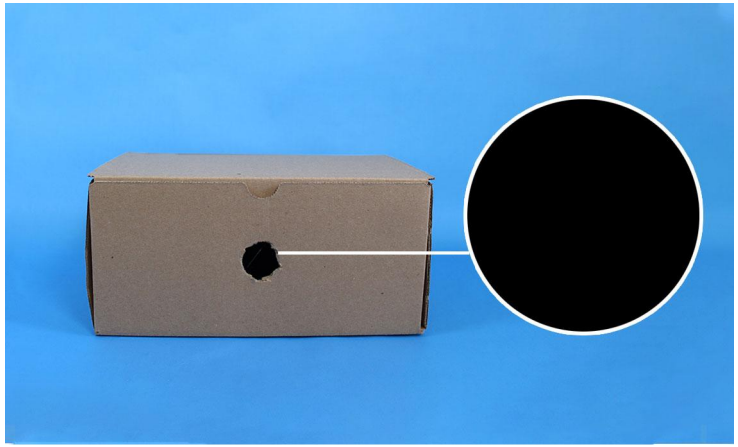
One information I can get is _____.

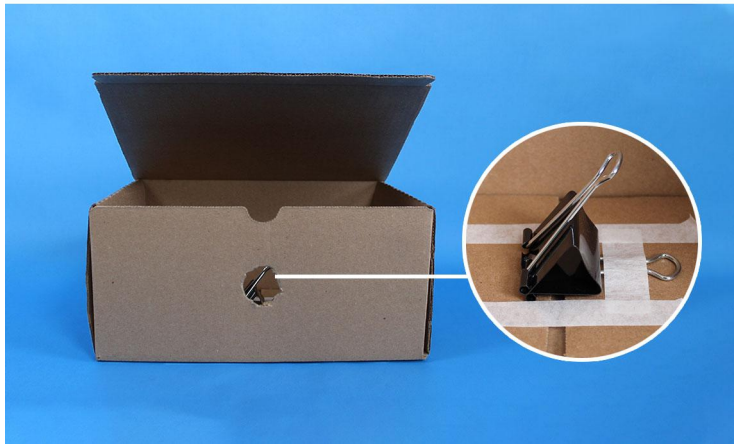
What **new ideas** does this give you about **what animals need** in order to see their food?

A new idea it gives me is _____.

Key Concept

Light, sound, and scent can carry information about the environment to an animal.





Without light, you could **not see** what was inside.

With light, the **information** about what was inside could be carried to you. You could **sense it** with your eyes.

Scientists ask questions about how the **natural world** works and what parts of it are like. They try to answer their questions through **investigation**.

Name: _____ Date: _____

Asking Questions About Light

Record at least two new questions you have about light.

_____

_____

_____

_____

_____

_____

Turn to page 18 in your notebooks.

Record two or more **questions** that you have about light.

End of Lesson

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UNIVERSITY OF CALIFORNIA, BERKELEY

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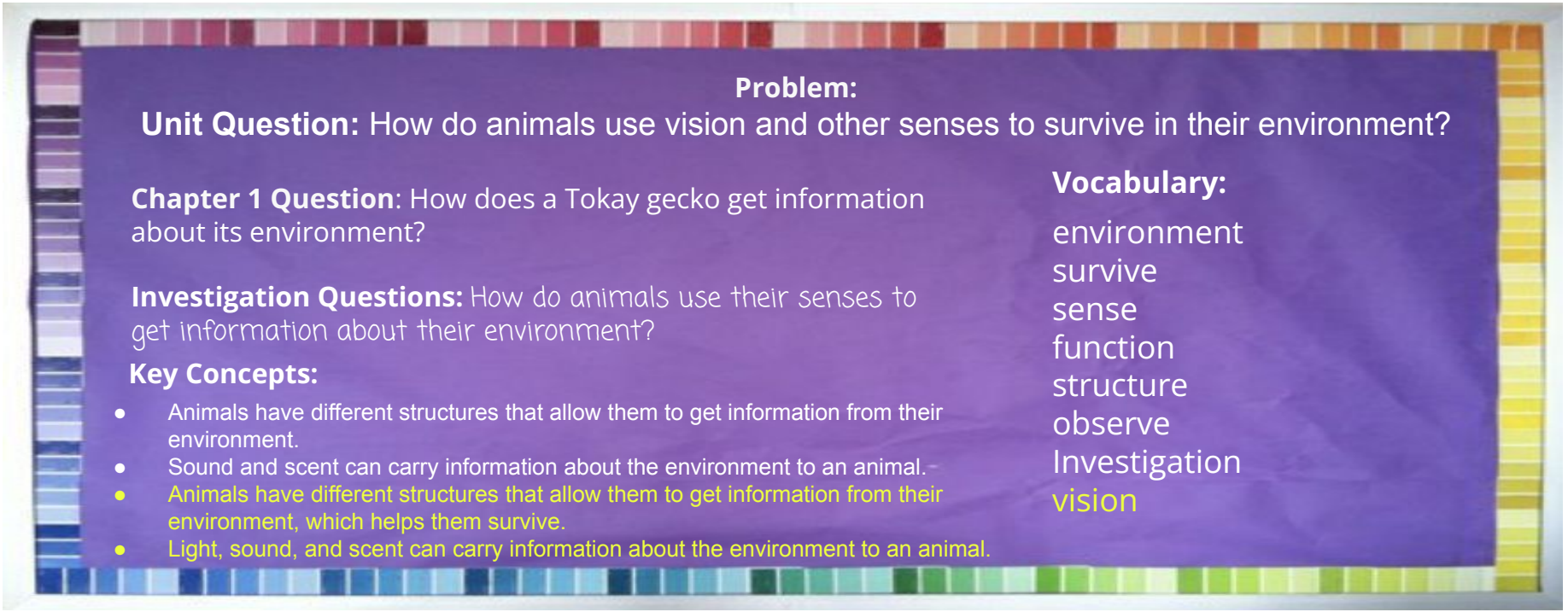
Vision and Light

Classroom Wall (After Lesson 1.4)



Problem:

Unit Question: How do animals use vision and other senses to survive in their environment?

Chapter 1 Question: How does a Tokay gecko get information about its environment?

Investigation Questions: How do animals use their senses to get information about their environment?

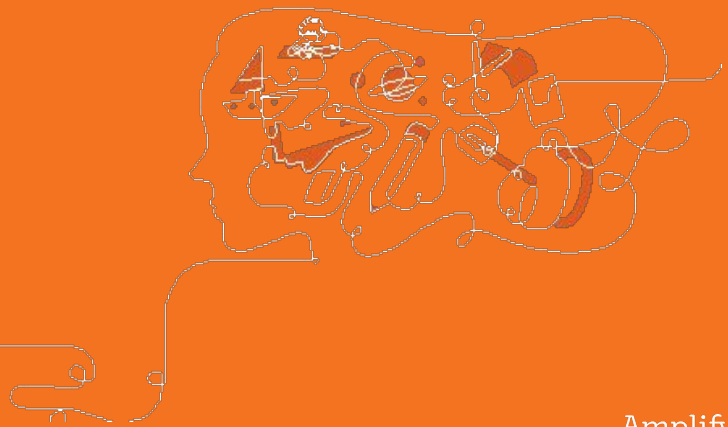
Key Concepts:

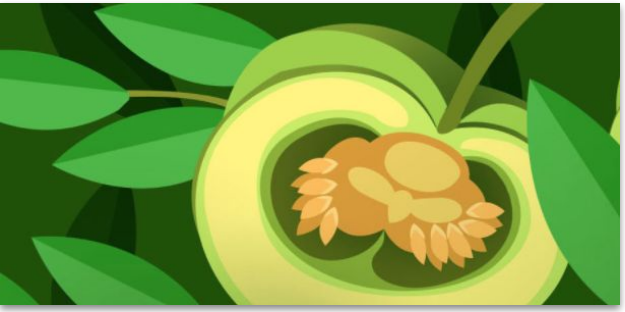
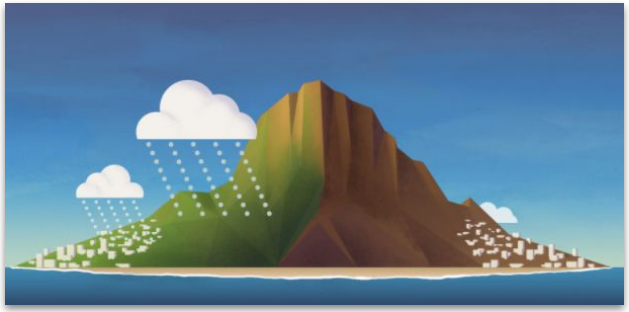
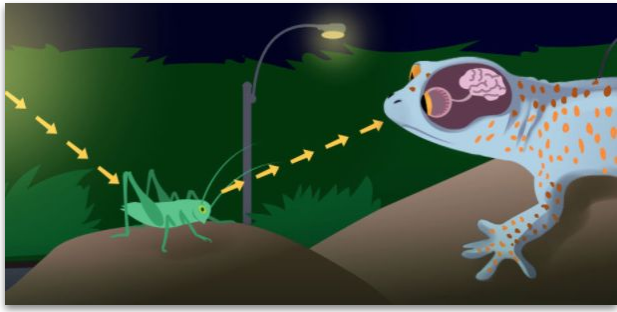
- Animals have different structures that allow them to get information from their environment.
- Sound and scent can carry information about the environment to an animal.
- Animals have different structures that allow them to get information from their environment, which helps them survive.
- Light, sound, and scent can carry information about the environment to an animal.

Vocabulary:

environment
survive
sense
function
structure
observe
Investigation
vision

Break



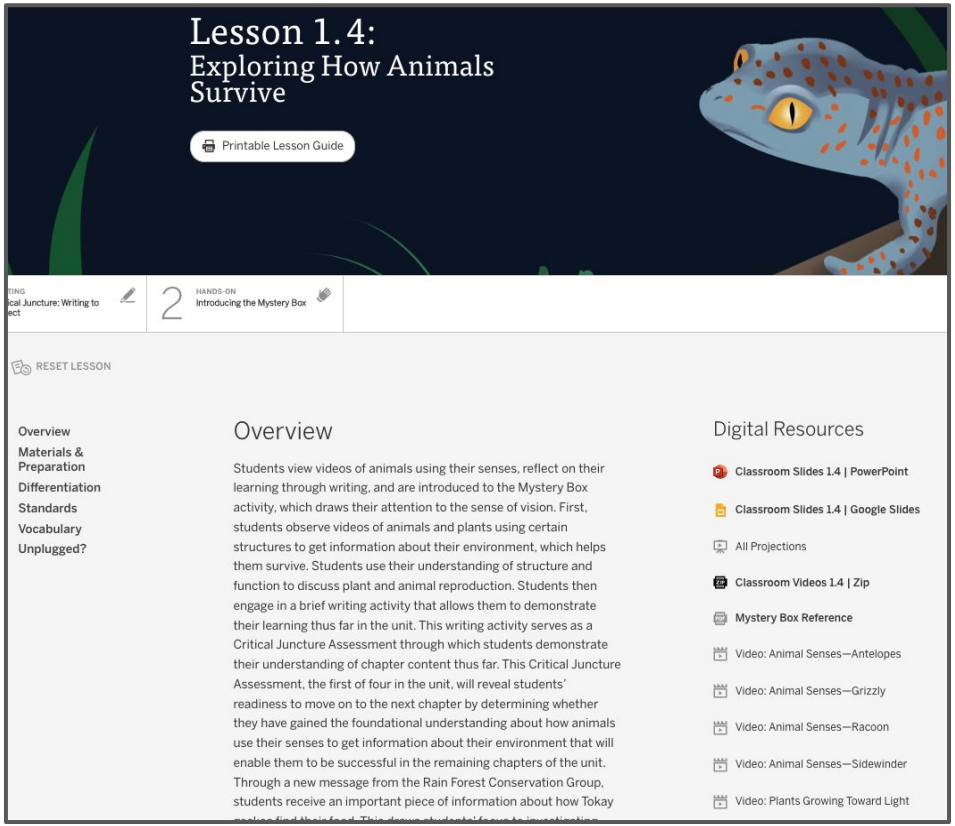




Plan for the day

- Introduction
- Assessment System
- Progress Build
- Assessments
- Model Lesson
- Planning
- Closing

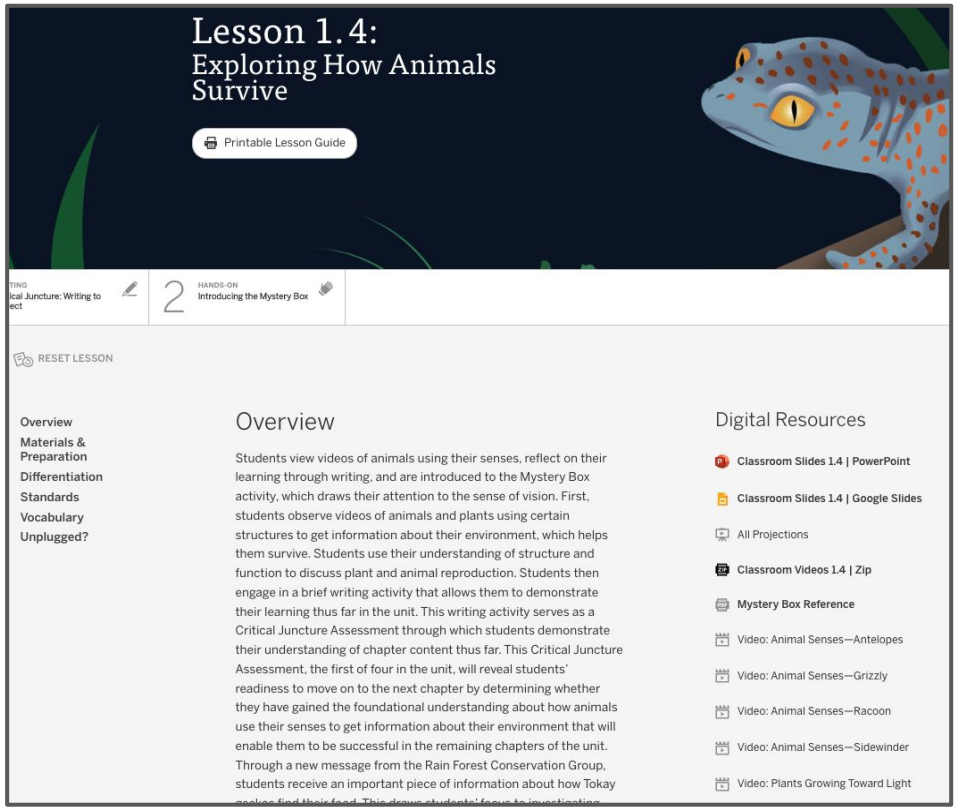
Work time - Planning

- Navigate to a lesson that you'll be teaching in the upcoming week that has a formative assessment opportunity (you might want to refer to the **Embedded Formative Assessment or Assessment System** documents on the Unit Landing Page)
- Review the assessment type and guidance



Work time - Planning

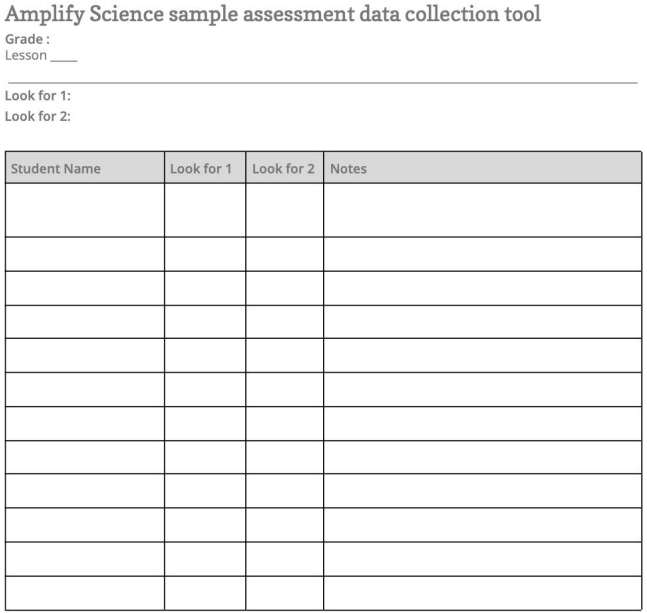
- Download and review the classroom slides
- Read the unit overview
- Read the Materials and Prep
- Read the differentiation
- Prepare any data collectors or assessment materials needed.



Work time - Planning

Be prepared to share out the:

- Lesson chosen
- Type of assessment
- “Look Fors” or “Assess for Understanding”
- “Now What” or “Tailor Instruction”
- Personal observations or reflections



Amplify Science sample assessment data collection tool

Grade :
Lesson ____

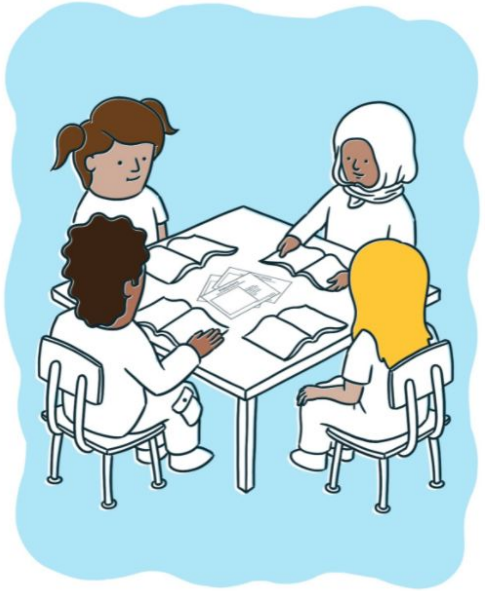
Look for 1:
Look for 2:

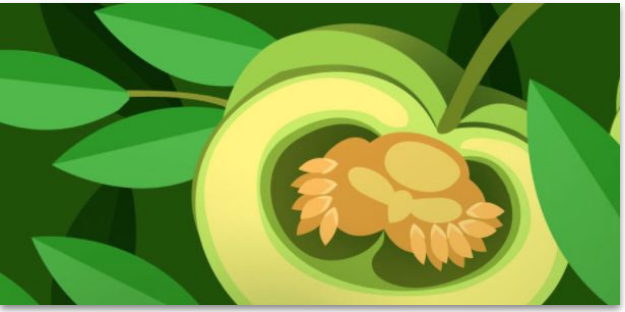
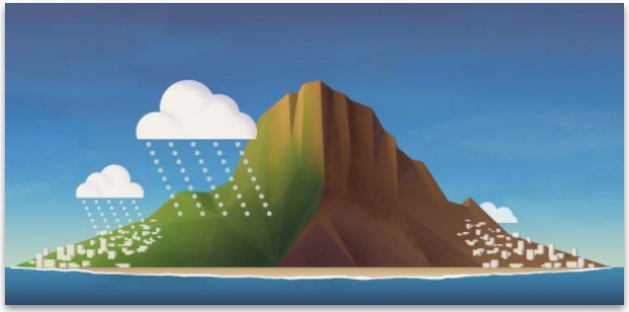
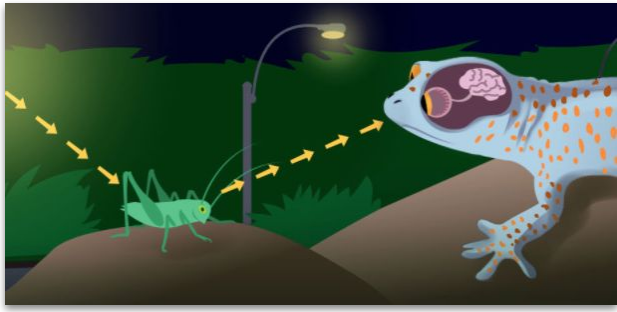
Student Name	Look for 1	Look for 2	Notes

Share Out

Share:

- Lesson chosen
- Type of assessment
- “Look Fors” or “Assess for Understanding”
- “Now What” or “Tailor Instruction”
- Personal observations or reflections



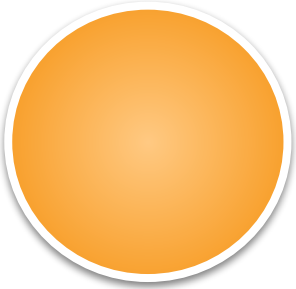
Plan for the day

- Introduction
- Assessment System
- Progress Build
- Assessments
- Model Lesson
- Planning
- Closing

Closing reflection

Based on our work today, share:

1-3 big points you're taking away from this session

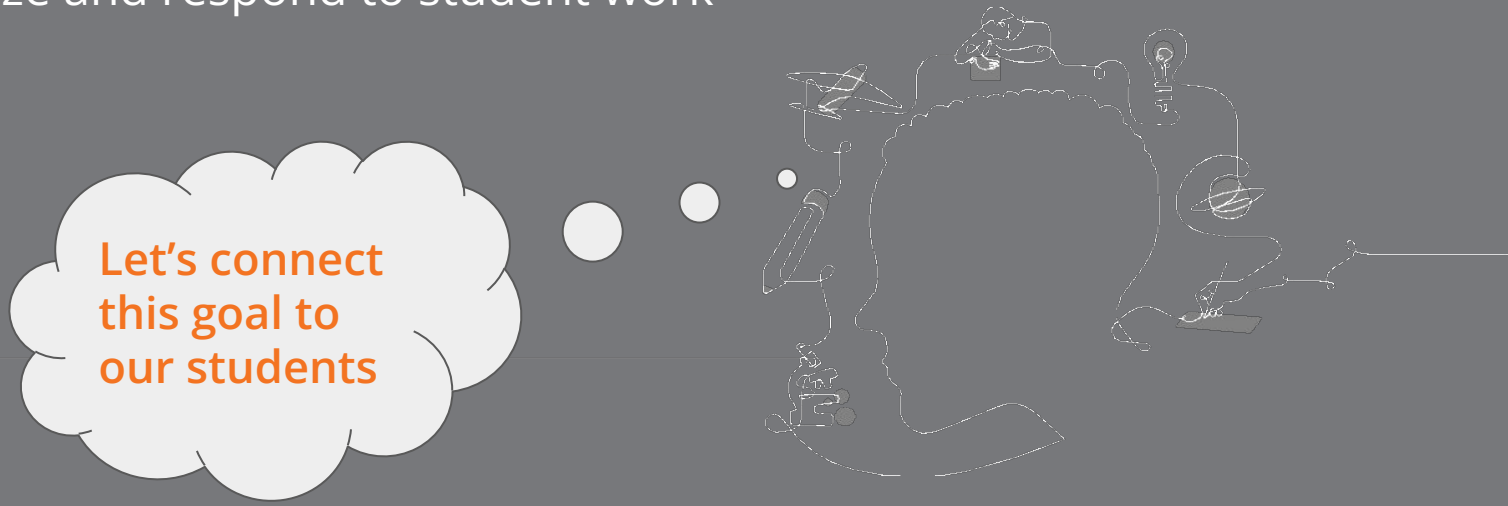


A question or topic that's still circling in your mind

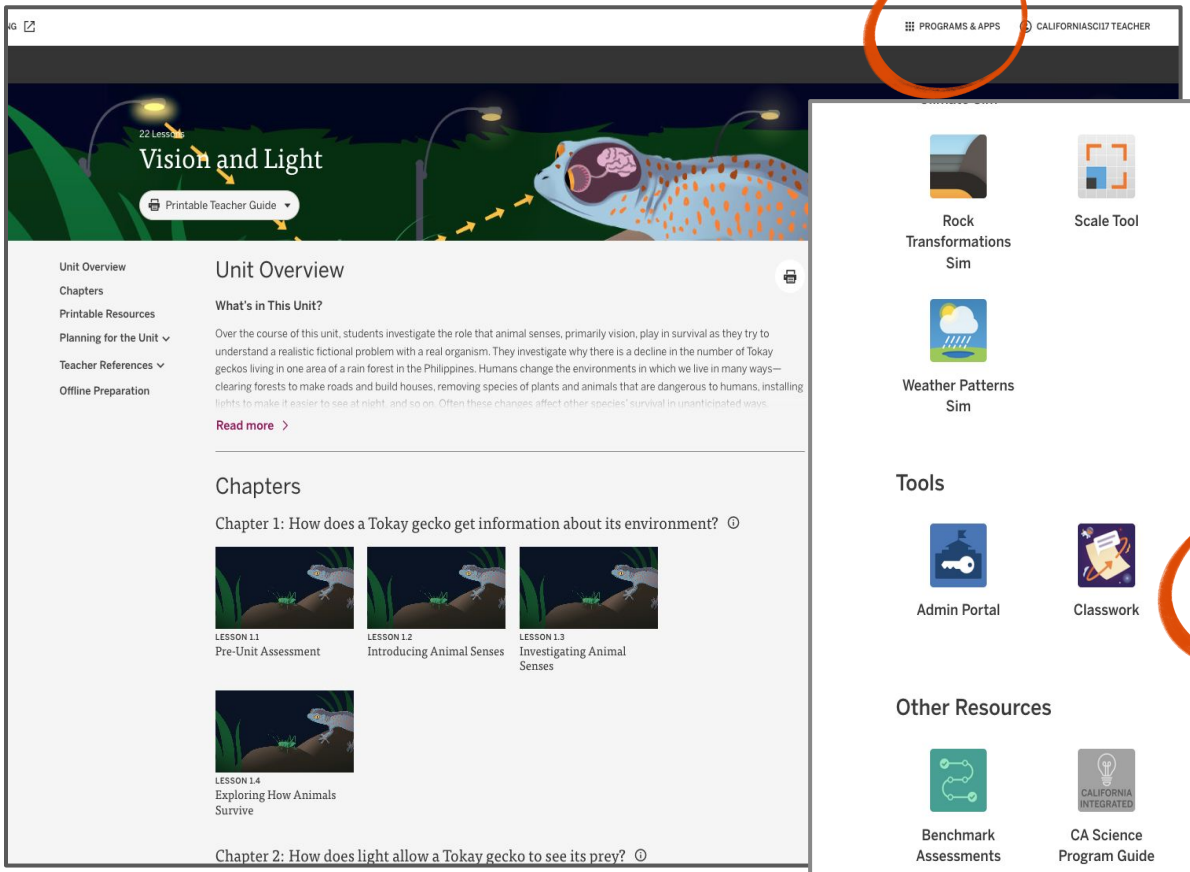
Something that's "squaring" (resonating) with you from this session

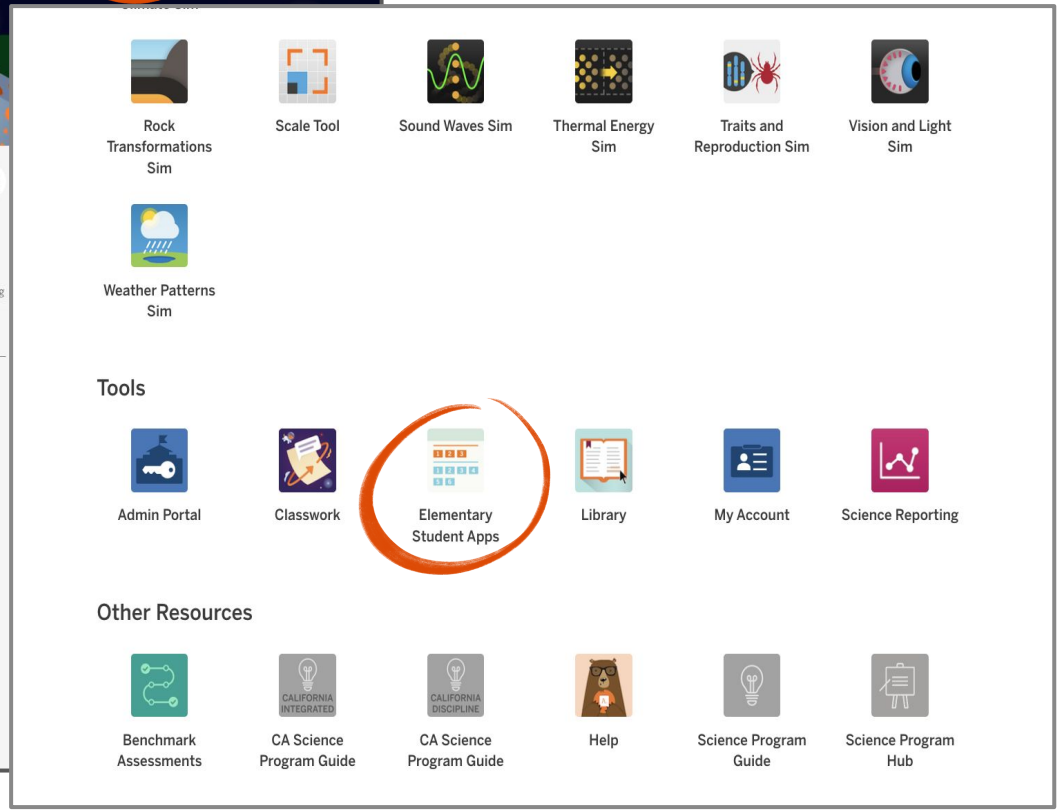
Overarching goals

- ☑ Describe the structure and purpose of the Amplify Science Assessment System
- ☑ Plan for the strategic use of assessment resources to analyze and respond to student work

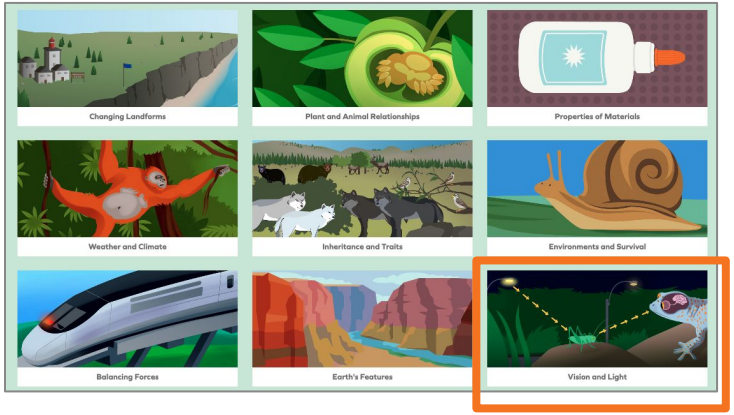


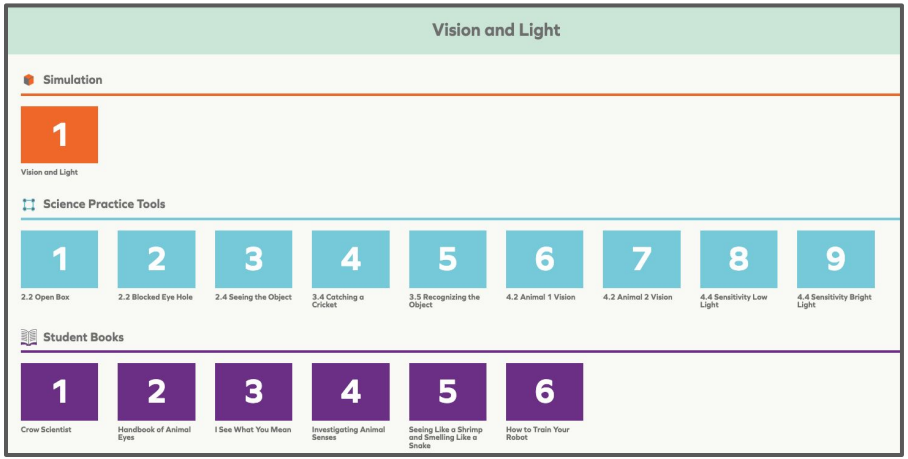
Navigating to the Student Apps page

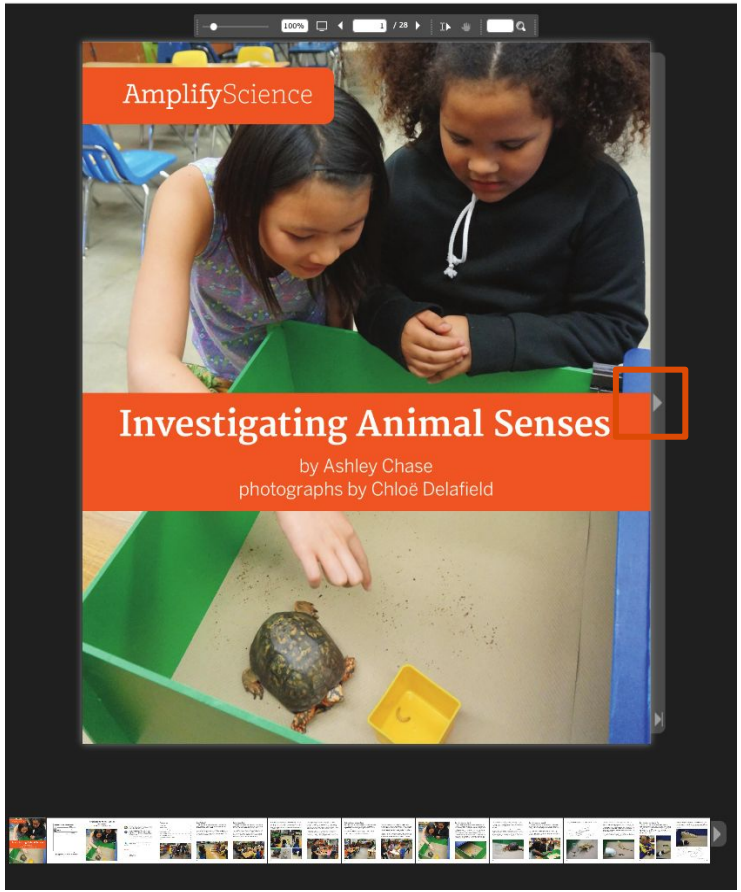




Student Apps page and accessing the book

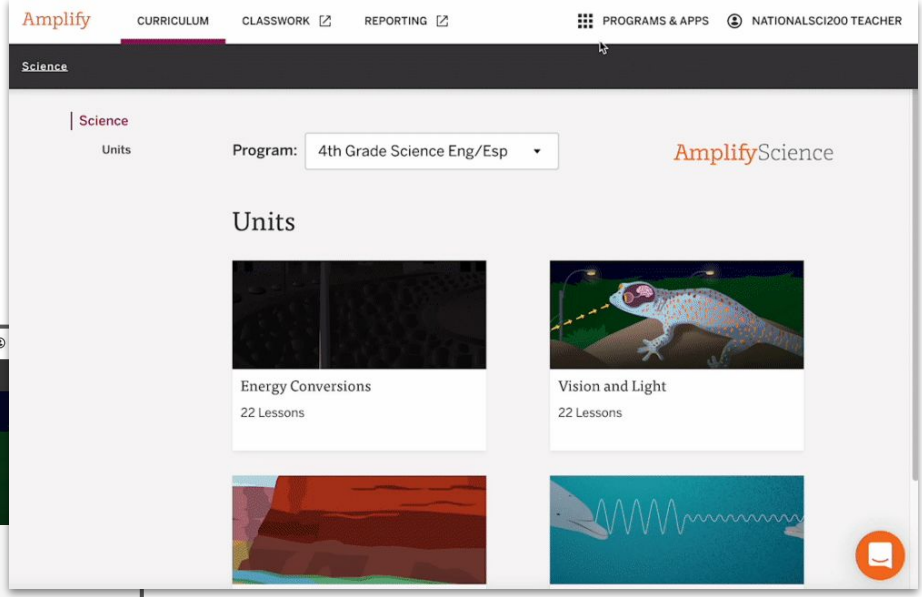


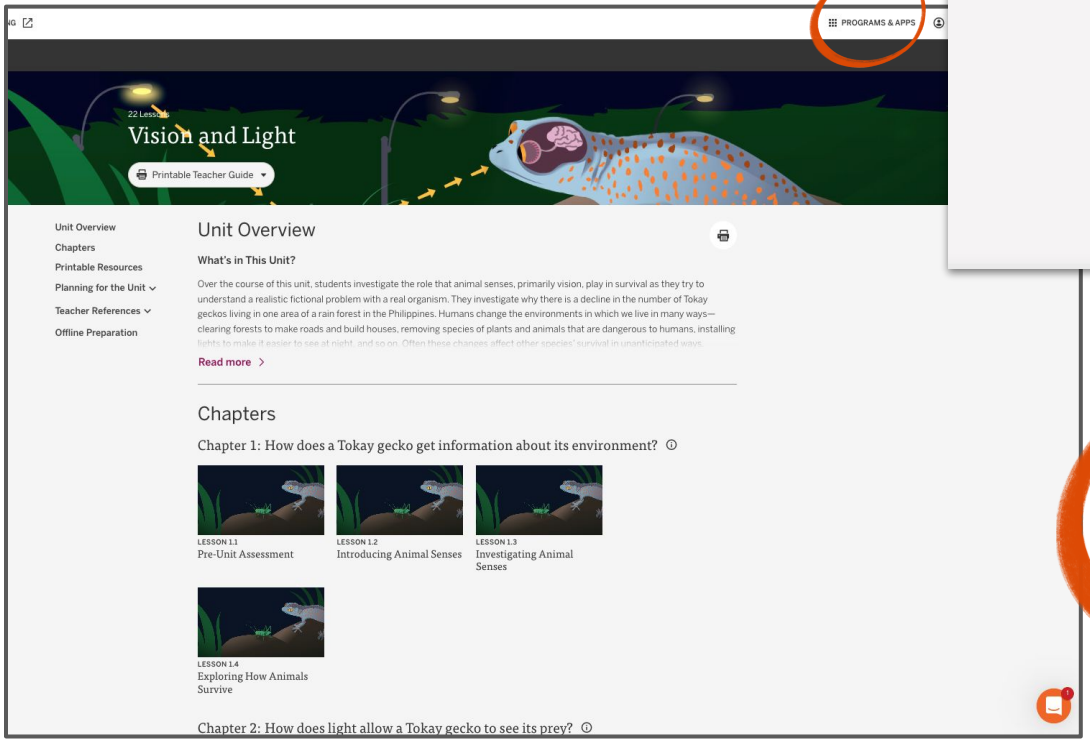


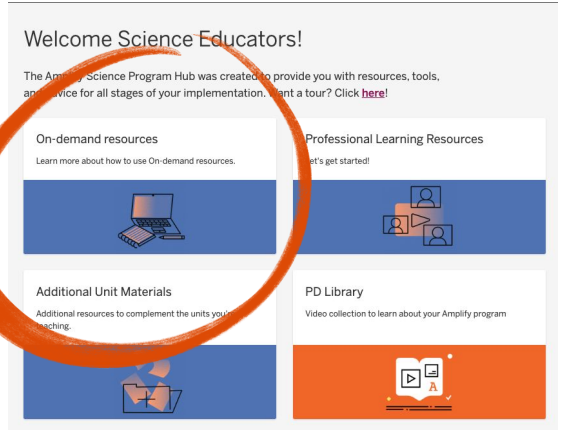


Program Hub

Use the Amplify Science Program Hub to find useful resources for implementing Amplify Science, including unit overview videos and planning tools.







Additional resources and ongoing support

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support.

Amplify Chat