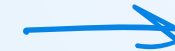




# Boots on the Ground for Knowledge Building: Roping Together Reading and Science

Scan the QR Code or visit [bit.ly/de-tcea-2025](https://bit.ly/de-tcea-2025) for more sessions!



## Session Goal

Use strategies grounded in research on vocabulary, comprehension and content acquisition to explore how integrating science and reading supports student learning in both areas.

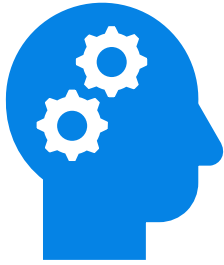
Literacy: A domain in search of content

Science: A domain in search of conversation

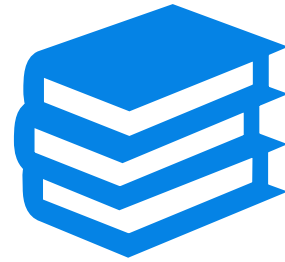


Background knowledge and language skills  
contribute to reading comprehension and the  
ability to learn science content.

# Literacy Focus



Background knowledge



Vocabulary



Verbal reasoning

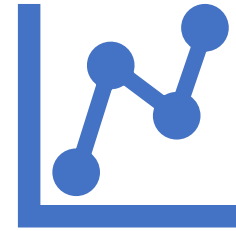
# Scientific Focus



Observation



Inquiry



Analysis

# Observation



# What do you notice?



# Stem Completion

I noticed\_\_\_\_\_

I think \_\_\_\_\_ because\_\_\_\_\_

I am curious about \_\_\_\_\_

This reminds me of \_\_\_\_\_





## Stem Completion Reference Guide

1. I observed \_\_\_\_\_.
2. I noticed \_\_\_\_\_.
3. I think \_\_\_\_\_ because \_\_\_\_\_.
4. I am curious about \_\_\_\_\_.
5. The similarities between \_\_\_\_\_ and \_\_\_\_\_ are \_\_\_\_\_.
6. The differences between \_\_\_\_\_ and \_\_\_\_\_ are \_\_\_\_\_.
7. These images are connected to our current unit of study because \_\_\_\_\_.
8. This reminds me of \_\_\_\_\_.
9. \_\_\_\_\_ is important because \_\_\_\_\_.

NAME: \_\_\_\_\_

Select three sentence stems from the **Stem Completion Reference Guide** and add them to the left column. Use the right column to record your response to each statement.

Stem #1	Response:
Stem #2	Response:
Stem #3	Response:

# Inquiry





## **Let your compass be your guide!**

Take out your phones.

Select your compass app.

Walk around the room with your compass to see what happens.

Make observations about the compass.

Generate your own questions as you explore the compass.





# Analysis



# Claims, Evidence, Reasoning

What is your claim?

What evidence is presented in the media to support your claim?

What reasoning can you use to tie the evidence to the claim?

# Explicit Instruction



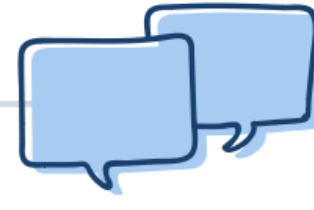
Segmenting  
complex skills into  
smaller  
manageable tasks



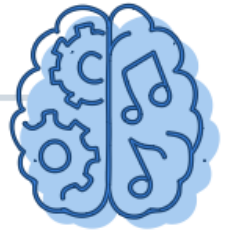
Modeling or  
thinking-aloud to  
address the  
important features  
of the content



Promoting  
successful  
engagement  
using fading  
supports and  
prompts



Providing  
feedback



Creating  
purposeful  
practice  
opportunities

## Read, Write and Think Like a Scientist:

### Inferring with Images

An author doesn't always tell you everything you need to know. To make an **INFERENCE**, you refer to the text and combine it with **YOUR** prior knowledge as well as evidence from the image.

What scientific information can you infer from reading the images?

2  
2

Picture #	Clues from the Picture (I See...)	My Prior Knowledge (I Know...)	Inference (So I Think...)







**Meet the albino squirrels of Olney.**

What challenges do you face when trying to teach complex science vocabulary to your students, and how have you tried to overcome them?



# Vocabulary Development



# Vocabulary Development



## Definition

a pull or push that is applied to an object

## Key Context

What is the difference between a bowling ball and a soccer ball? A bowling ball is much heavier. It takes a lot of force to move a bowling ball. Force is a push or a pull on an object. In this case, the object is the bowling ball.



Engage

#### LESSON 1



### How Do Different Forces Affect Objects?

In this lesson, students will make observations about the forces affecting an object and access prior knowledge to make an initial claim about...

Real-World Phenomenon

🕒 20 mins



Explore

#### LESSON 2



### Play Ball

In this lesson, students will investigate how forces cause an object to change position and direction and describe how energy is...

Hands-On Activity

🕒 40 mins



Explore

#### LESSON 3



### Monster Truck Pull

In this lesson, students will investigate and explain how unequal pulling forces acting on an object in opposite directions can cause motio...

Interactive

🕒 20 mins



Explore

#### LESSON 4



### The Rhythm of Push and Pull

In this lesson, students will explain the effects of equal forces acting on an object and the effects of unequal forces acting on an object.

Video

🕒 20 mins



Explore

#### LESSON 5



### Changing the Speed of Motion

In this lesson, students will explain how energy transfers and demonstrate the effects of unequal forces on objects in motion.

Interactive

🕒 20 mins



Explore

#### LESSON 6



### Energy and Forces

In this lesson, students will explain how energy is transferred through equal and unequal forces.

Literacy

🕒 20 mins





Literacy is the domain in search of content, and science is the domain in search of conversation.

**P. David Pearson**

*Lawrence Hall of Science, UC Berkeley*





# Content Channels



Take a peek into a few of Discovery Education's dynamic channels that support the Pillars of the Science of Reading.

Sesame Learning

Instructional  
Activities

English  
Language Arts

Reading:  
Decoding

Literacy

Writing Process

Audio and Video  
Books

Vooks

Cram Jams

Language  
Learner Center

Best of  
Interactives

Virtual Field Trips

DEmystified  
Science

Need to Know  
Social Studies

The Week Jr.

Science News

Background  
Builders

Texas History

Science Channel

Social Studies  
Channel

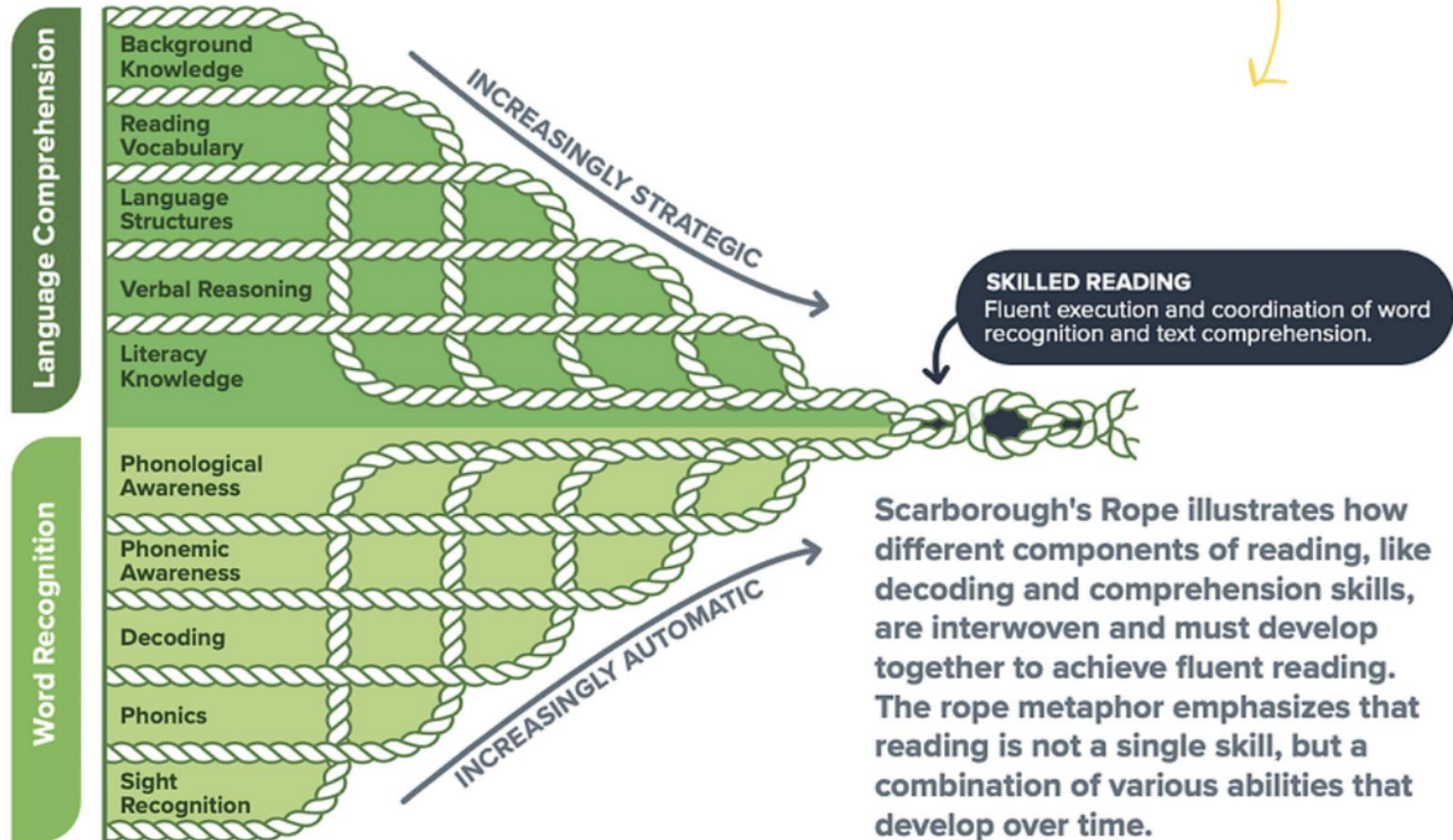


Math Channel

STEM Careers

Home

# Scarborough's Reading Rope





# Explore how Discovery Education's dynamic resources support the **5 Pillars of Literacy**

Phonemic  
Awareness

Phonics

Fluency

Vocabulary  
Development

Reading  
Comprehension

Ready to use  
Slideshows

Educator  
Microlearnings

Literacy  
Supports

Content  
Channels

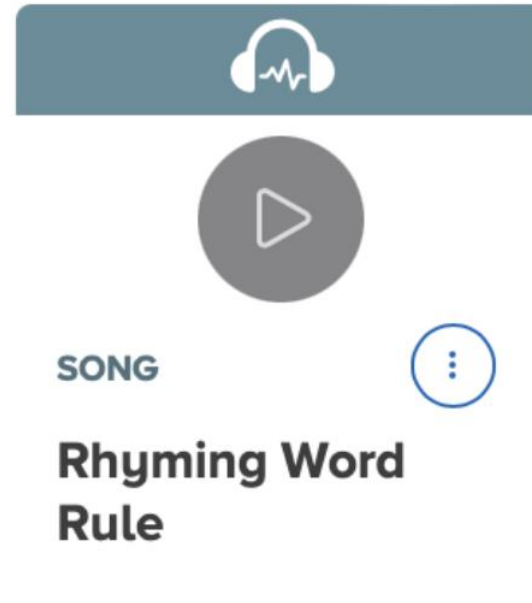
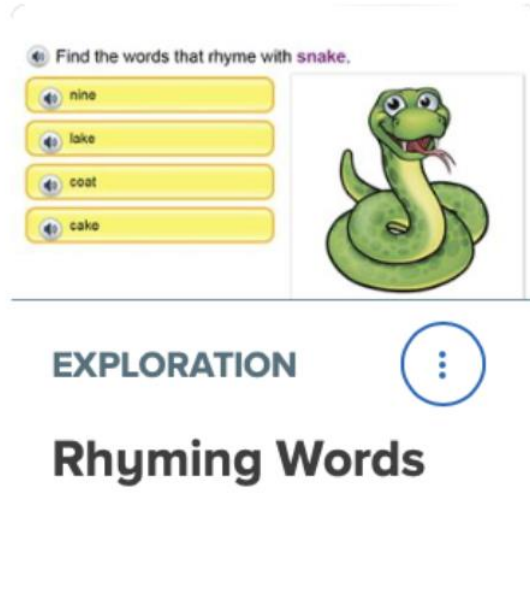
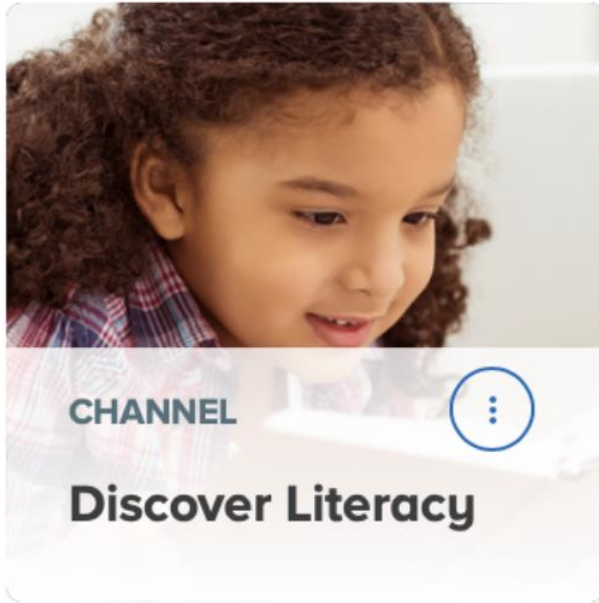
SOS

Quiz Tool

Studio Tool

# Phonological and Phonemic Awareness

The ability to identify and play with individual sounds (phonemes) in spoken words.



From fun interactive skill games, to engaging videos, ready-to-use lessons, and embedded literacy supports, Discovery Education has a variety of options to assist students with developing phonemic awareness skills.

Home



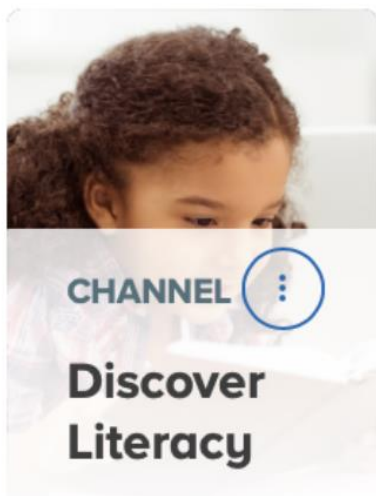




# Phonics



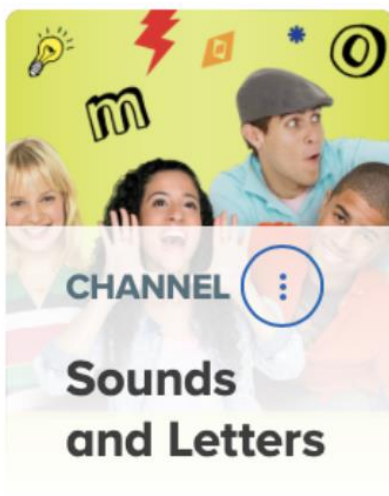
Instruction focuses on how letters and groups of letters link to sounds to form letter sound relationships and spelling patterns.



CHANNEL



**Discover  
Literacy**



CHANNEL



**Sounds  
and Letters**



FULL  
VIDEO



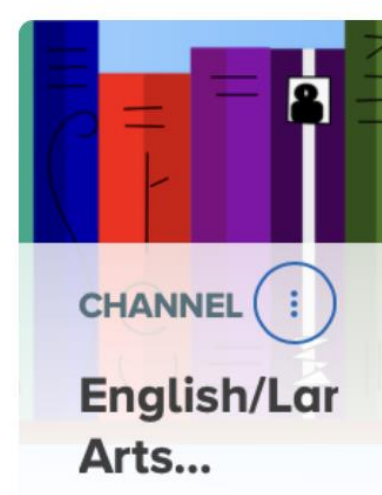
**F Is for Fox**



EXPLORATION



**Sorting  
Initial...**



CHANNEL



**English/Lar  
Arts...**



VIDEO  
SEGMENT



**Ash's  
Phonics -...**

Enrich phonics lessons with our dynamic collection of videos series such as Ash's Phonics and Sesame Learning Letter Time, that also provide supporting lesson plans. Students will enjoy practicing and developing various phonics skills with skill builders and explorations. Reading Park will personalize the phonics journey for students to meet them where they are at.

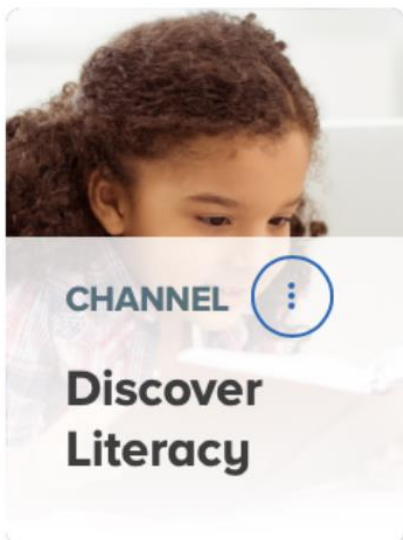
Home



# Fluency



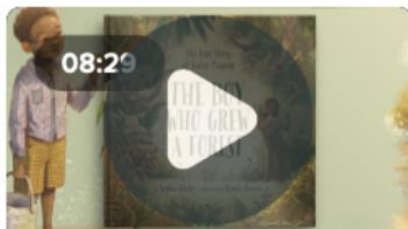
The ability to read words, phrases, sentences, and stories with enough speed and expression



CHANNEL



**Discover  
Literacy**



FULL VIDEO



**The Boy Who  
Grew a Forest**



PDF  
ACTIVITY



**The Boy  
Who Grew ...**



READING  
PASSAGE



**Let's Learn  
about Sharks**



PDF  
ACTIVITY



**Spotlight on  
Strategies...**

**DE Quiz  
Tool**

**DE Studio  
Tool**

Students will love reading with our content, tools, and strategies designed to strengthen fluency and ELA skills. Rich vocabulary and engaging text in read-alouds enhance fluency, while multimodal content offers built-in supports like read-aloud features, highlighting, reading rulers, and page masks. Tools like our Quiz tool and SOS strategies, such as Quick Writes, provide additional opportunities to practice and develop fluency.

Home



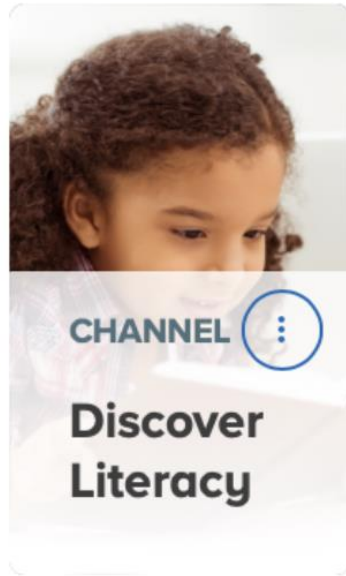
# Vocabulary Development

Knowing what words mean and how to say and use them correctly

**Science Techbook  
Elementary**

**Science Techbook  
Middle School**

**Social Studies  
Techbook Lesson**



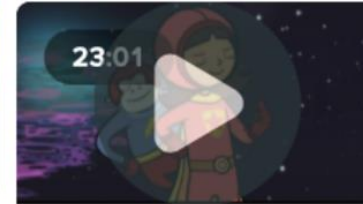
LESSON ⓘ

**Exotic  
Pets:...**



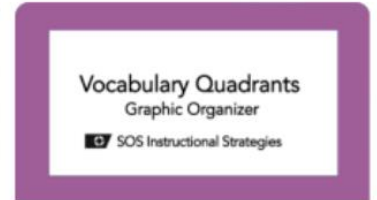
SKILL  
BUILDER ⓘ

**Solar  
System...**



FULL  
VIDEO ⓘ

**WordGirl:  
WordGirl...**



GRAPHIC  
ORGANIZER ⓘ

**Vocabulary  
Quadrant...**

Discovery Education offers a variety of vocabulary development resources. Students can expand their vocabulary through the interactive glossary, skill-building challenges, engaging video series with writing prompts, and graphic organizers that support lessons and readings.

Home

# Reading Comprehension

The ability to process written text, understand its meaning, and to integrate with what the reader already knows.



## Smart Mouthguard...

Evaluate the author's purpose and use of...



## Causes of the American...

Learn about events that caused the...



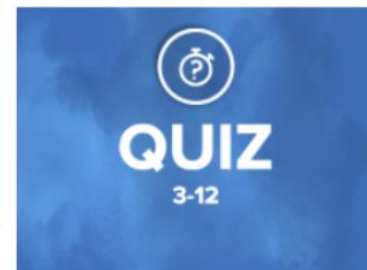
## Background Builder: Cel...

Students will learn how to define a cell an...



## Daily Fix-It: October (3-5)

Establish a daily classroom routine that combines...



STANDARD QUIZ

## Exit Ticket: Learn, Connect, Question

Number of Questions: 3

Students list two things they learned today, connect the concept to...



CHANNEL

## SOS Instruction...

Using our ready to use cross curricular interactive lessons or *Techbooks* with questions, reading passages, interactives, and constructed responses, students will be able to build background knowledge and apply learning in a variety of tasks.

Home



SCIENCE  
TECHBOOK  
FOR TEXAS



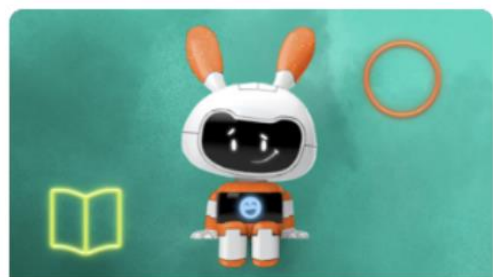
SOCIAL STUDIES  
TECHBOOK





# Ready-To-Use Slideshows

Students will enjoy learning with our interactive ready to deliver slideshow lessons complete with teacher supports, handouts, and immersive reader.

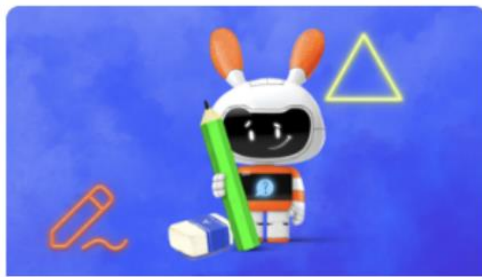


SLIDESHOW



## Sound Sequence: Phonological...

Use this activity to support phonological awareness by...



SLIDESHOW



## Decoding: Phonics Studen...

Use this activity to support phonics instructions by...

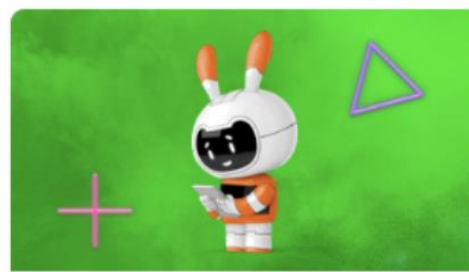


SLIDESHOW



## Automaticity: Fluency Stude...

Use this activity to support fluency by having students rea...

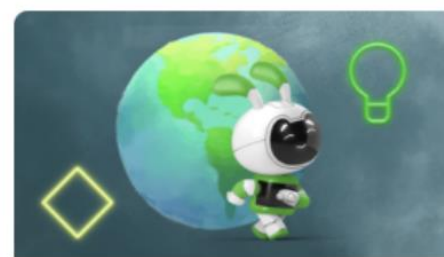


SLIDESHOW



## Tier 1 Vocabulary...

Use this activity to support vocabulary development by...



SLIDESHOW



## Text Structures: Comprehensi...

Use this activity to support comprehension by...

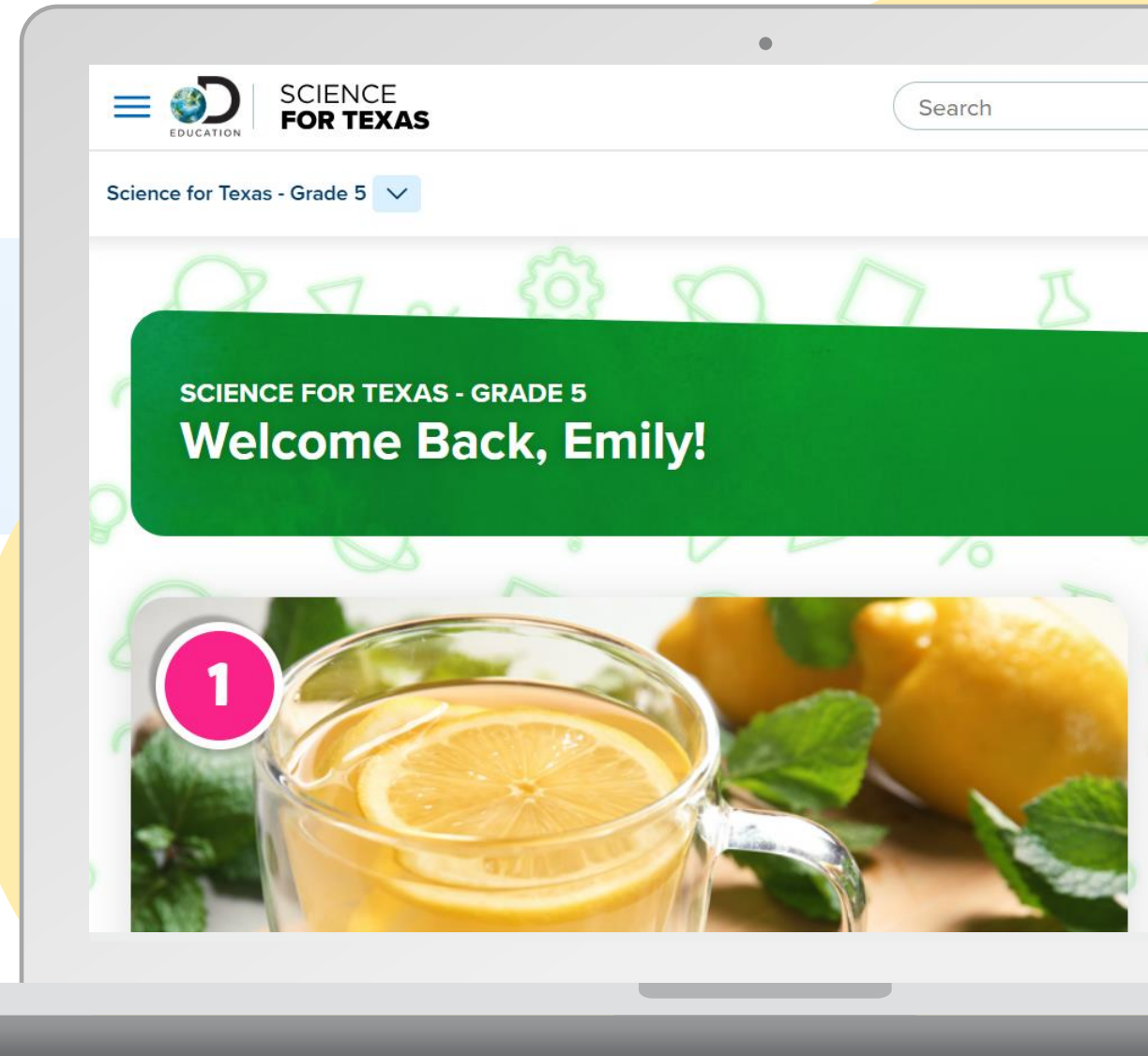
Home

# LOG IN NOW!



Username: **DE\_TCEA25**  
Password: **Discovery**

1. Scan or visit **discoveryeducation.com**
2. Click "Log In"
3. Type in the credentials above!





# Your Turn to Explore



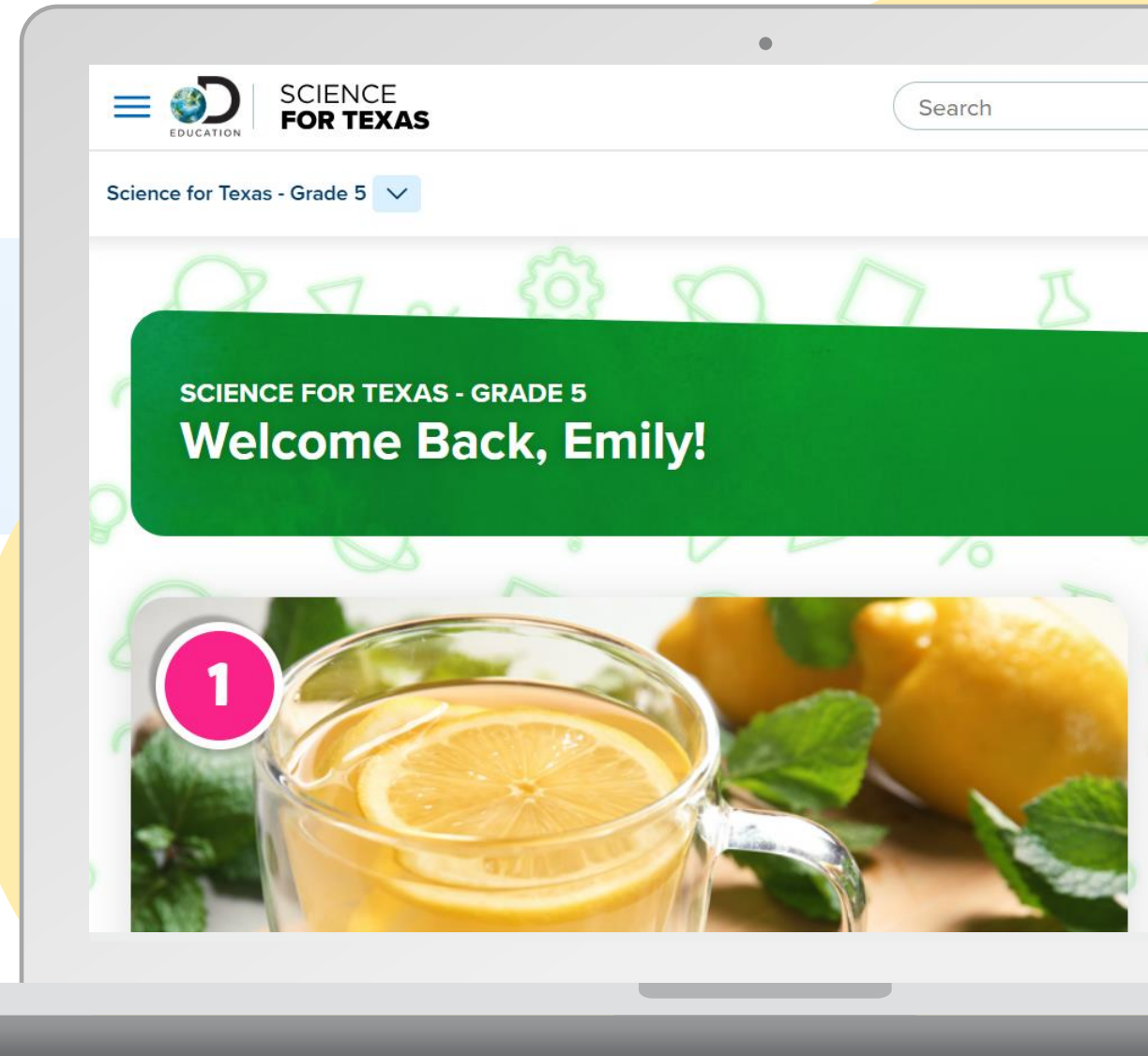
<https://tinyurl.com/TCEADE25>

# LOG IN NOW!



Username: **DE\_TCEA25**  
Password: **Discovery**

1. Scan or visit **discoveryeducation.com**
2. Click "Log In"
3. Type in the credentials above!





Thank you for joining us today!

