

Capitalizing on Science to Give Access to the Language Arts Common Core for English Learners



Marco A. Bravo
Saúl I. Maldonado

English Language, Literacy in Subject Areas (ELLISA)

PURPOSE

- ❧ Prepare Pre-Service Teachers with Models for *doing* Literacy Across the Curriculum – *Science*
 - ❧ *Literacy Practices Germane to Science*
- ❧ Test the Efficacy of the model & effectiveness with English Learners

Instructional Strategies

Academic discourse
Instructional
conversations

Promoting
Subject Matter
Talk

Authentic literacy tasks
Vocabulary

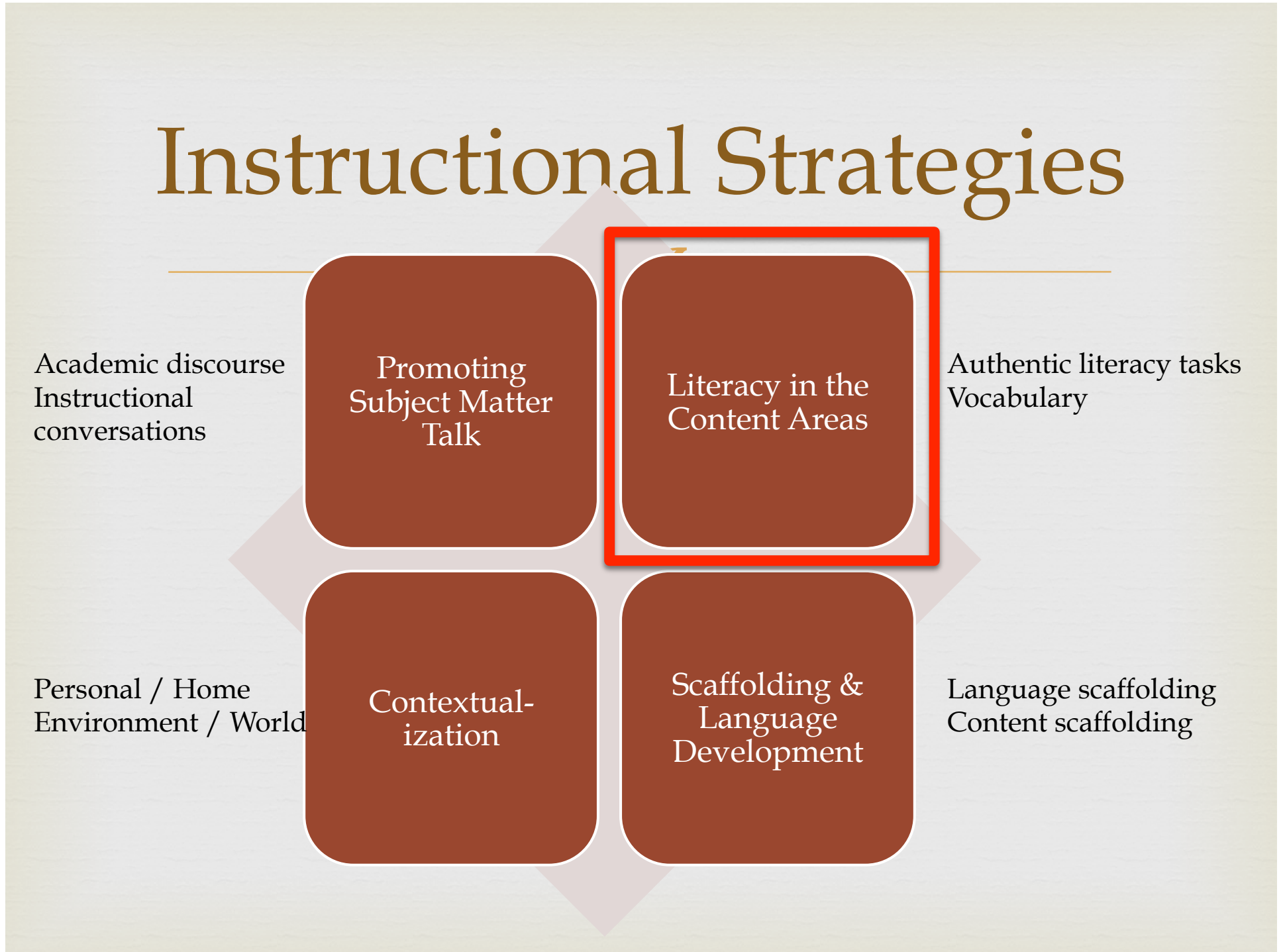
Literacy in the
Content Areas

Personal / Home
Environment / World

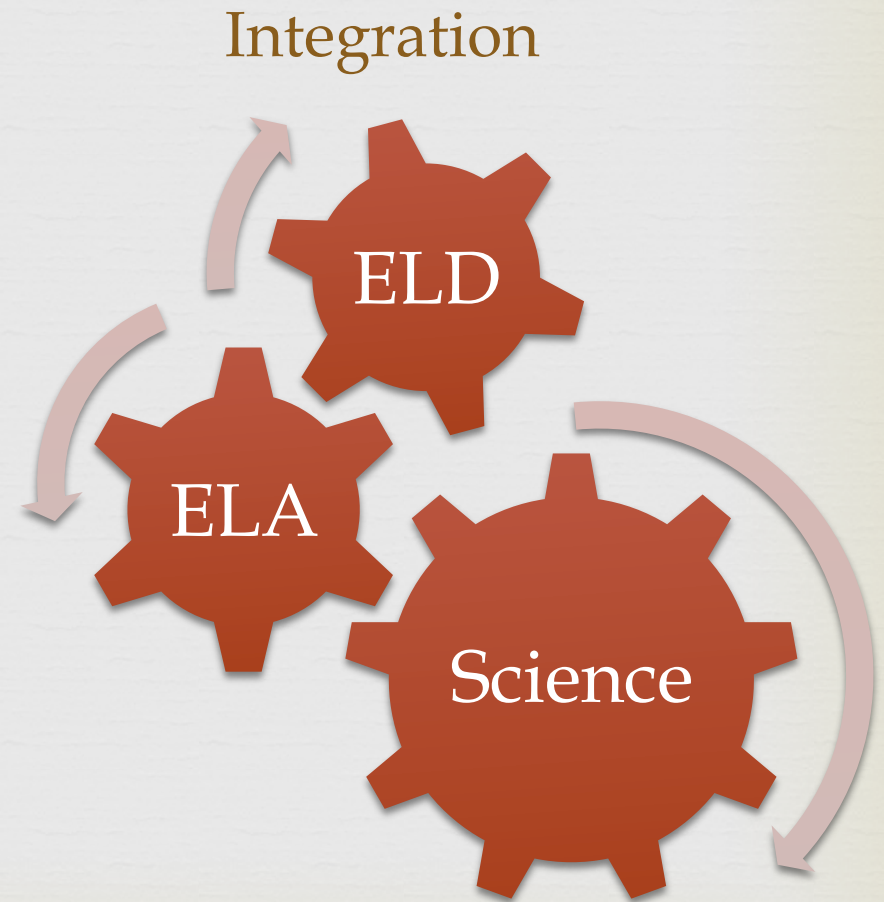
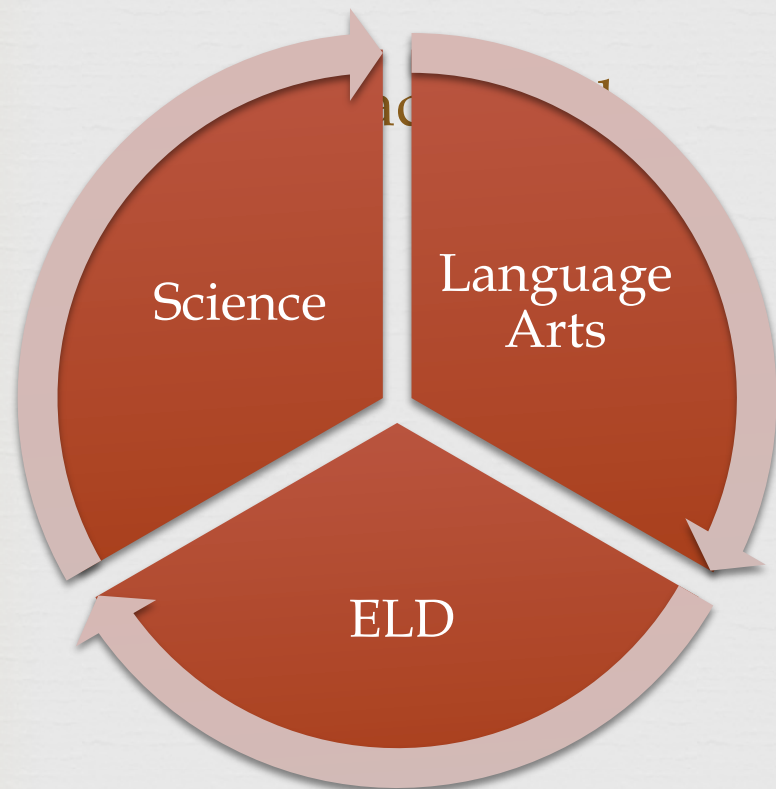
Contextual-
ization

Language scaffolding
Content scaffolding

Scaffolding &
Language
Development



Pedagogical Shift



What does Science Afford?



- ❧ Authentic reasons for reading informational text
- ❧ Contextual Support (e.g., *manipulatives, realia*)
- ❧ Opportunities for *Metalinguistic Awareness* of language in Science

Science	Everyday
observe	see
record	write down
predict	guess
soil	dirt

Scaffolding ELs' Reading of Informational Texts



- Text Structures
- Text Features
- Contrastive Analysis Span/Eng

Text Structures



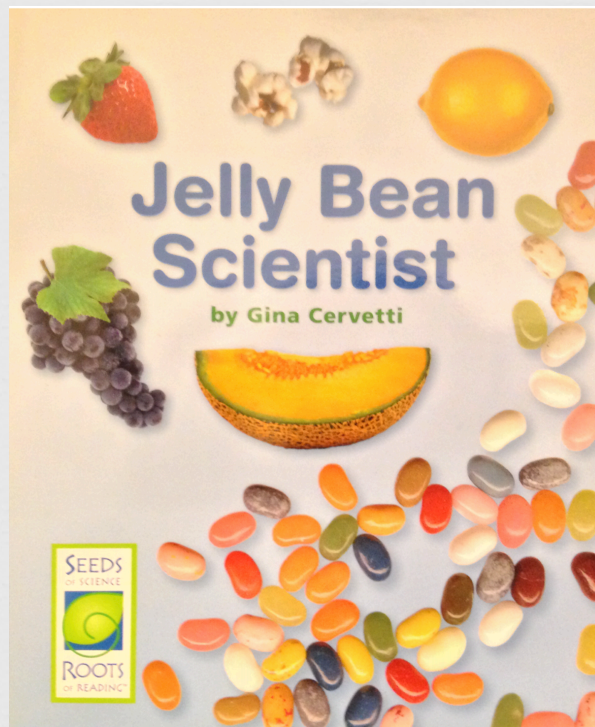
- ❧ Organization of Informational text
 - ❧ Chronological
 - ❧ Compare & Contrast
- ❧ Teaching Ss to recognize text structures help ELs:
 - ❧ Focus attention on key concepts
 - ❧ Visually represent relationships b/w pieces of information
 - ❧ Anticipate what is to come
 - ❧ Monitor their comprehension as they read

Text Structures of Science Texts



- ❧ Cause-Effect
- ❧ Problem-Solution
- ❧ Compare-Contrast
- ❧ Time-Order
- ❧ Description
- ❧ Question-Answer

Text Structure: *Question/Answer*



Part One: Visiting a Food Scientist

What is a food scientist?

Ambrose Lee is a food scientist. His job is to design new flavors of the candy called jelly beans. Ambrose and his team also test the new flavors of jelly beans.



Ambrose Lee is a food scientist. He works in a jelly bean factory.

Text Structure: *Graphic Organizer*



Question–Answer Text Structure Graphic Organizer

Question	Answer
What is a food scientist?	
How are new jelly bean flavors made?	
Why test jelly beans?	

Text Structure: *Description*



The Desert Habitat

Sandy deserts are hot and dry places.
Many animals live in this habitat.
What helps them survive?

Fennec foxes dig holes underground
to find shelter from the hot sun.

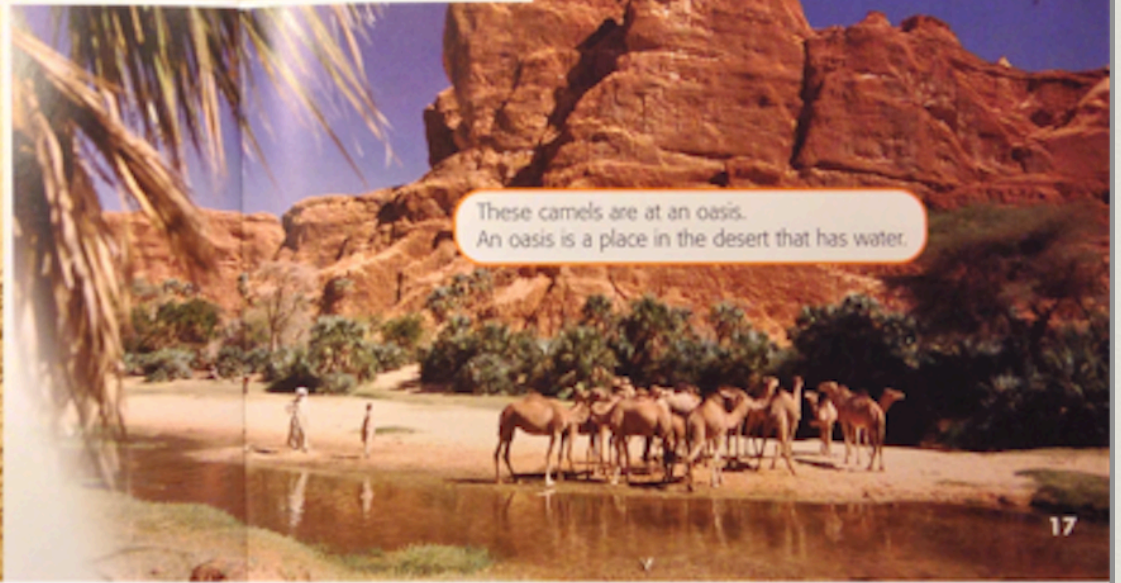


16

The skink eats insects
that live in the desert.

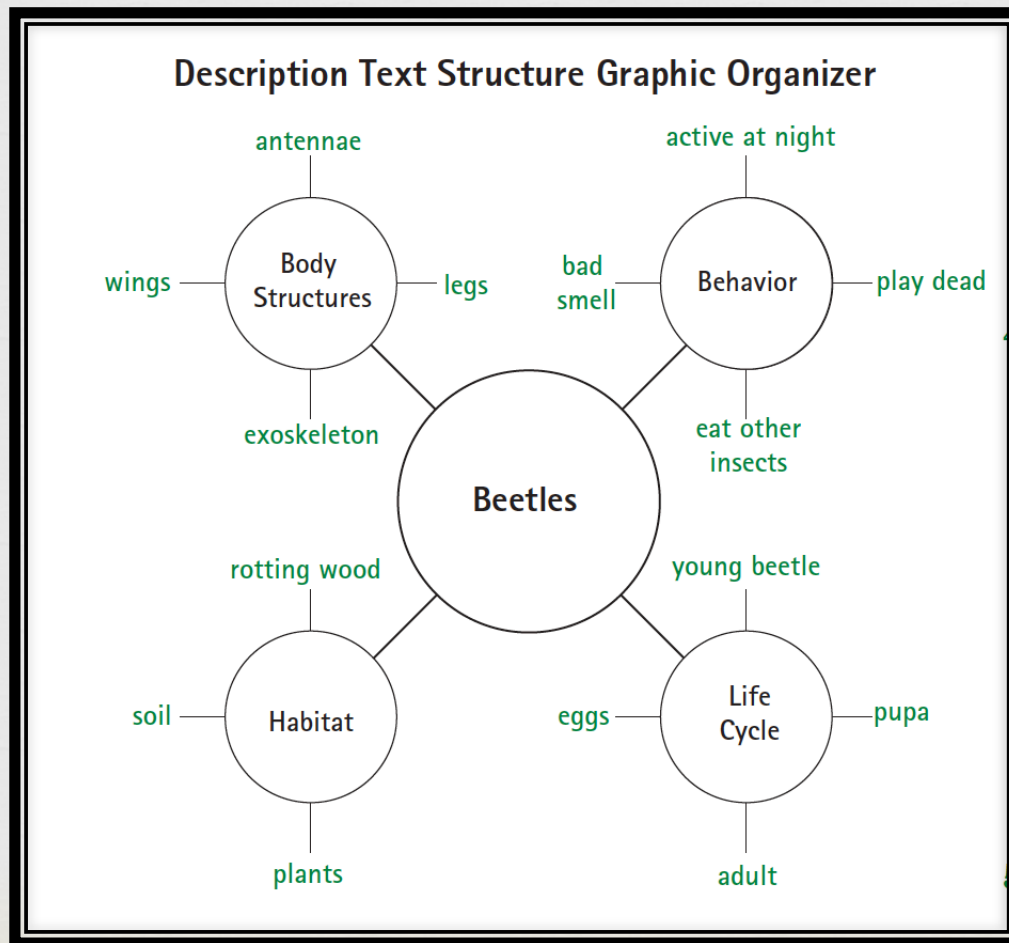


These camels are at an oasis.
An oasis is a place in the desert that has water.



17

Text Structure: *Description*



Text Structure: *Time Order*



Key Concept 1 The life cycle of animals moves through birth, growth, and reproduction, and ends at death.

Birth

A giant panda has the same **life cycle** as most other mammals. A giant panda's life cycle begins when a cub is born.

A newborn panda cub is tiny and helpless. It cannot see. It cannot walk, and so its mother has to carry it. It cannot eat, but it can drink its mother's milk. The panda cub depends on its mother for everything.



This newborn panda has been drinking milk from its mother's body.

Growth

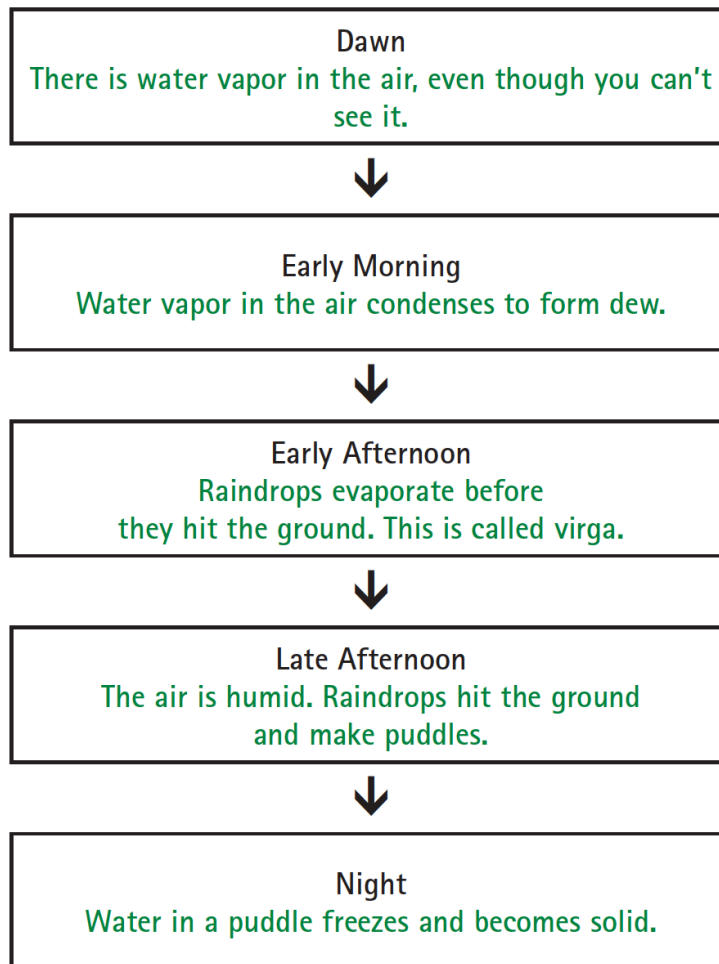
The life cycle of a giant panda continues as the cub grows. The cub can see when it is about six to eight weeks old. It starts walking when it is about 12 to 16 weeks old. By this time, the cub becomes stronger. It is also more playful.

At eight or nine months, a giant panda cub stops drinking milk. It starts eating bamboo. But it still stays with its mother. The cub starts living on its own when it is 18 months old. It is full-grown, or an adult, when it is four to six years old.



This panda cub is just starting to open its eyes.

Text Structure: Time Order



Text Structures of Science Texts & *Signal Words*

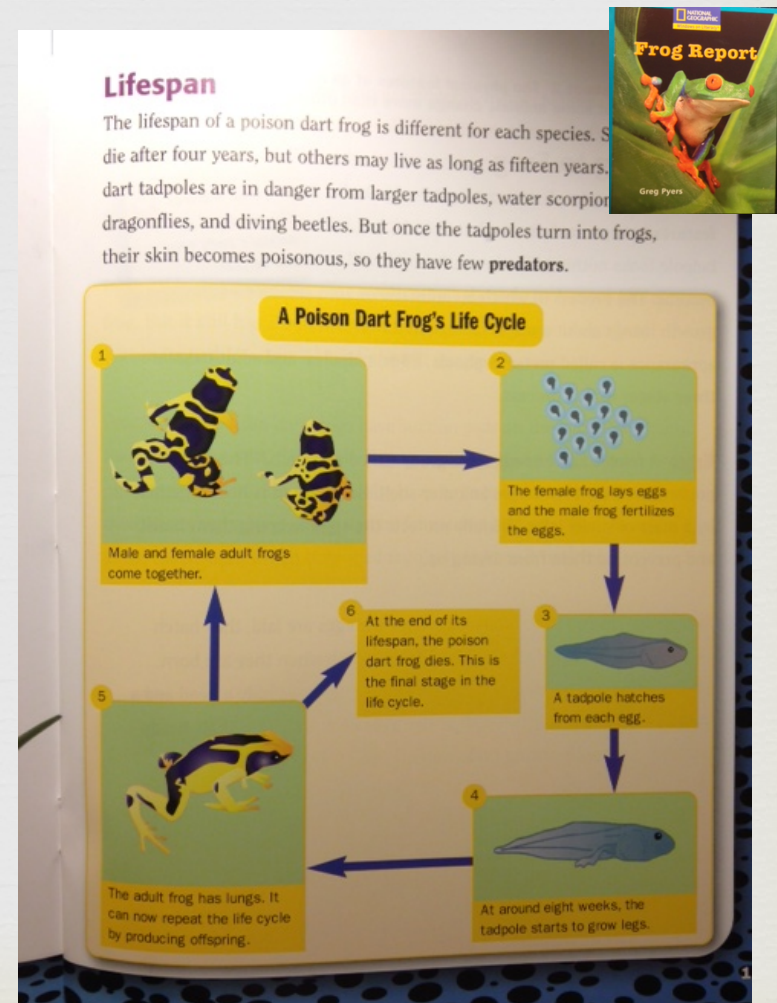
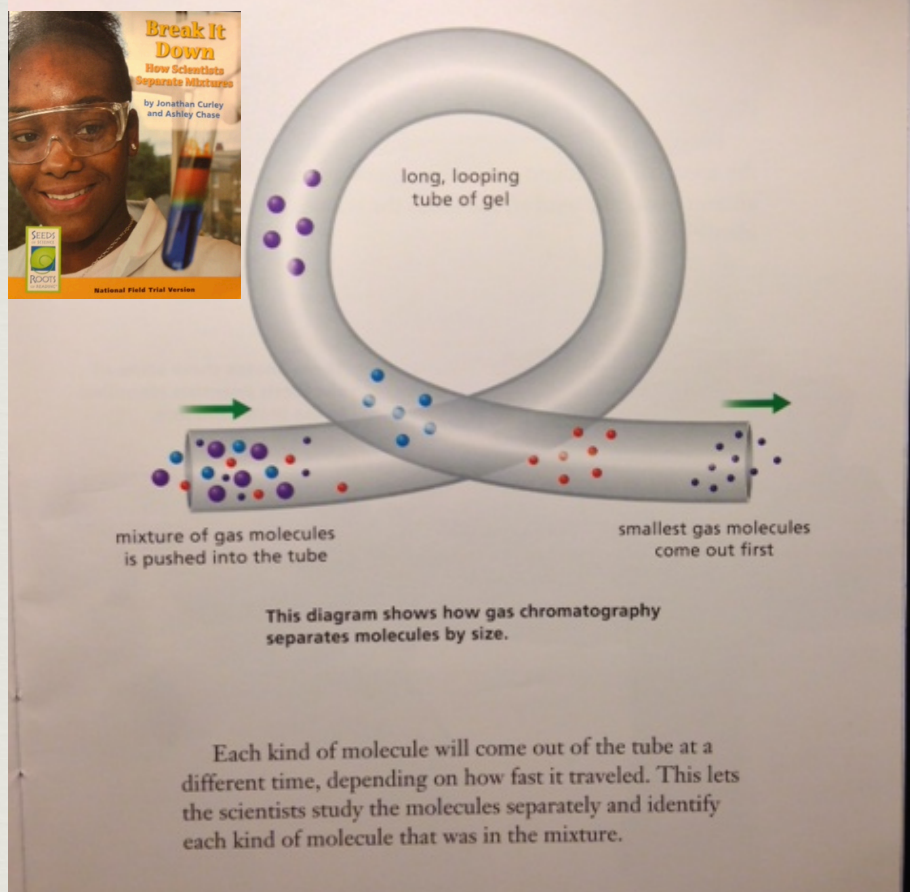
Cause-Effect	<i>therefore, as a result, lead to, so, because of, thus, in order to, if... then</i>
Problem-Solution	<i>unfortunately, therefore, trouble, problem, issue, challenge, answer, solution, conclusion</i>
Compare-Contrast	<i>different from, the same as, similar to, as well as, but, compared to, in contrast, however, like, unlike, more, less</i>
Time-Order	<i>First, next, then, last, finally, meanwhile, following, before, after, on [date]</i>
Description	<i>For example, for instance, in addition, also, too, some, all, other</i>
Question-Answer	<i>What, where, why, who, how, when, does</i>

Text Features



- ❧ Features of texts that provide access points into and information about the text
 - ❧ *index, Illustrations, Subheadings*
- ❧ Text Features help readers:
 - ❧ Identify the most important ideas in a text
 - ❧ Anticipate what's to come
 - ❧ Understand challenging ideas
 - ❧ Find information they are looking for
- ❧ In science, texts features:
 - ❧ Explain, organize, emphasize, reinforce, and extend important information

Text Features: *Diagrams*



Tracking Text Features



	TITLE
	Table of Contents
	Index
	Glossary
	Headings
	Bulleted List
	Bold Print
	Italic Print
	Diagrams
	Photographs/ Illustrations
	Captions
	Tables

Contrastive Analysis

L1/L2 Differences



Lugares calurosos

Algunos lugares de la Tierra son calurosos.



Este pueblo está en un desierto caluroso.

- ❧ Capitalizing Headings
- ❧ No accent on all capitalized texts

Contact Information



Saúl I. Maldonado
simaldon@ucsc.edu

Marco Bravo
mbravo@scu.edu