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OUTREACH



FIELD TEST ORIENTATION

SPRING 2022

ORIENTATION AGENDA



Overview of the project



Descriptions of the activities



Timeline and data collection procedures

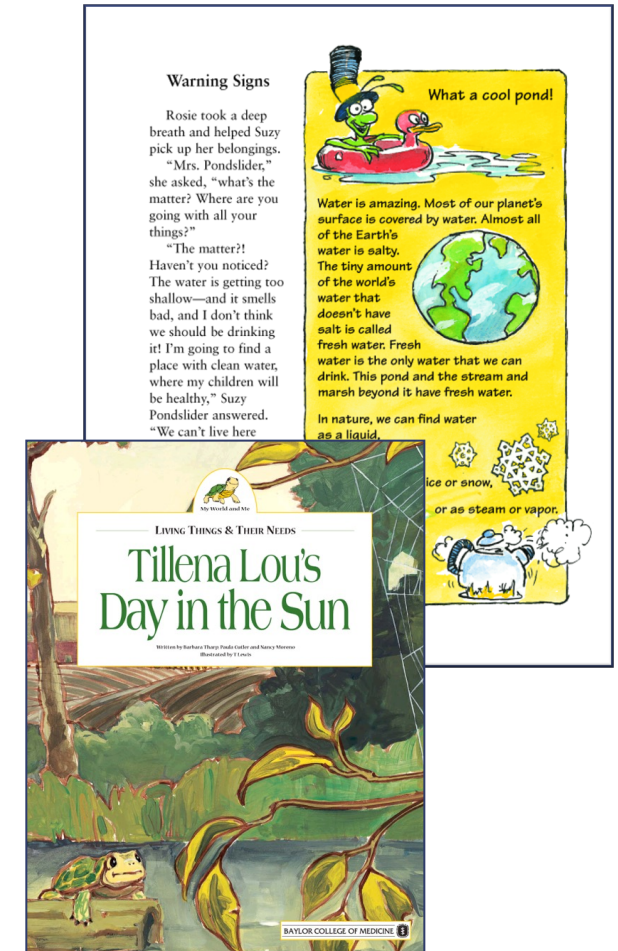


I'm taking an innovative approach to teaching this semester. I'm using books!"

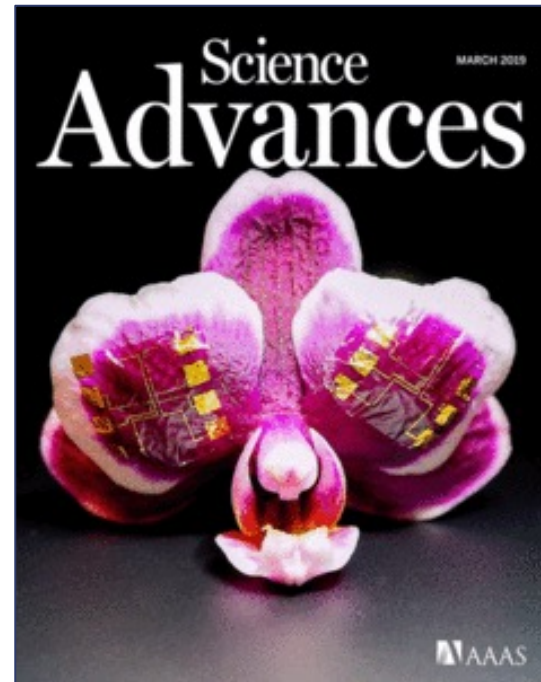
CROSS CURRICULAR LINKS TO READING CONTRIBUTES TO...

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- Learning of targeted science concepts, especially among Spanish-speaking students.
- Greater rate of improvement in science achievement scores among Hispanic students (tests administered in English).
- English vocabulary development and appropriate use in writing samples by all students (increased correct use of science vocabulary words and number of “if/then” statements).



WHAT DO SCIENTISTS READ?



LITERACY IN SCIENCE IS UNIQUE

- Technical terms known only to members of the group.
- Extensive noun phrases that convey large amounts of information.
"They generated a suite of forest canopy functional trait maps from laser-guided imaging spectroscopy..." (*Science* 355: 363)
- Information flows and is cross-referenced.
This remarkable diversity... (metaphor summarizes previous text).
- Includes reasoned arguments.
- Extensive use of visual representations (figures, tables, graphs, charts, maps, photographs) and symbols.
- Scientists ("experts") approach and read a paper differently from novices.



AT THE HEART OF WHAT MAKES THIS MODEL DIFFERENT... DISCIPLINARY LITERACY

- **Disciplinary literacy.** The specialized information and organizational patterns, language, vocabulary, syntax, text features, and ways of interpreting, evaluating, and conveying evidence and information within a particular discipline. An approach that identifies and teaches the specialized reading and writing skills, text features, and foci needed to successfully comprehend material in a particular discipline.

SCIENCE LANGUAGE LEARNING

Science language learning:



Reading, writing, and talking like a scientist



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ACTIVITIES



OVERVIEW OF EACH DAY

Each day consists of three sections:

- A whole group mini-lesson that focuses on a science-specific disciplinary literacy strategy.
- Small, guided inquiry circle groups in which learners practice and apply their science-specific disciplinary literacy strategies to their own research.
- A whole-class, teacher-facilitated science inquiry activity.

1

Independent Exploration and Discovery

Inquiry Circles Strand

Mini-lesson

- Students conduct ELA research in small independent groups.
- Each group selects its research question.
- Research skills are built sequentially and are introduced in the mini-lessons.
- Culminates in group capstone presentation.
- Outcomes are reading, writing, and speaking skills related to informational texts, and use of language as a scientist.

Mini-lesson

Mini-lesson

Mini-lesson

- Topic introduced via a Portal Text
- Curated informational texts and media are used for research
- Mini-lessons teach targeted skills and strategies
- Data sources are informational texts

2

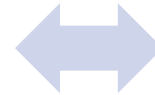
3

Guided Exploration and Discovery

Science Guided Inquiry Strand

- Students conduct hands-on investigations as a whole class or in small groups.
- Central question or topic is provided by teacher or lesson materials.
- Activities build science understandings and skills sequentially.
- Outcomes are science content knowledge and skills; and development of a science identity.

Unifying
Science
Themes
and
Content



- Hands-on observation and data collection
- Use of authentic scientific tools to investigate organisms and models
- 5 – E learning cycle
- Data is collected by observation

MINI-LESSON OVERVIEW

- Intentional instruction
- Three sections of each mini-lesson
- Modeling the mini-lesson
- Anchor charts
- Daily strategy reminders



INTENTIONAL INSTRUCTION

Teachers provide opportunities for readers to engage in science-specific disciplinary literacy strategies.

Teachers use think-alouds to support development of metacognition.

THREE SECTIONS OF THE MINI-LESSONS

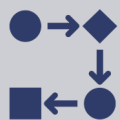
- Declarative: what the strategy is
- Conditional: when to employ the strategy and why it is important
- Procedural: what the steps are when you do what you do

Note: the terms *declarative*, *conditional*, and *procedural* are meant for teachers, not learners.

MODELING THE MINI-LESSON



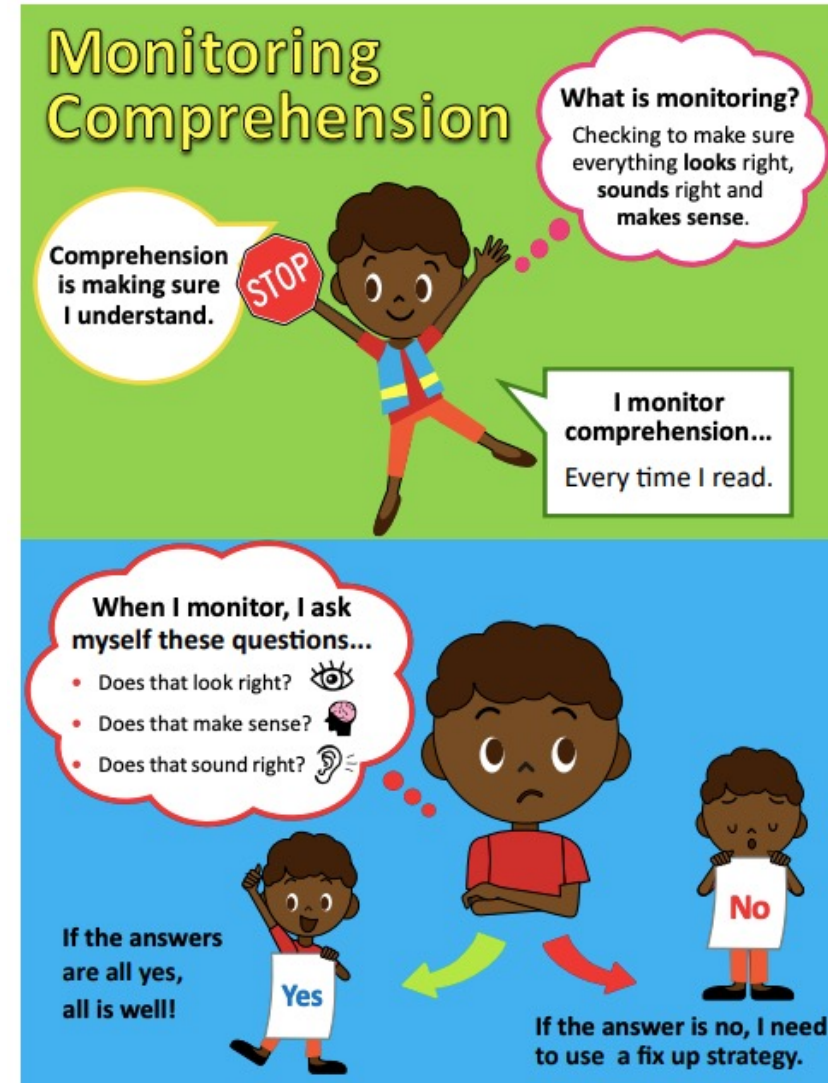
Model the strategy using one of the texts (see list in web resources).



Learners will take what you have demonstrated and will apply it to their inquiry circles.

ANCHOR CHARTS

- Example anchor charts have been provided.
- These anchor charts are intended to be developed *with your learners*.



DAILY SCIENCE-SPECIFIC DISCIPLINARY LITERACY STRATEGY REMINDERS



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Each mini-lesson contains reminders of science-specific disciplinary literacy and transcendent strategies that learners should be encouraged to use throughout the unit.

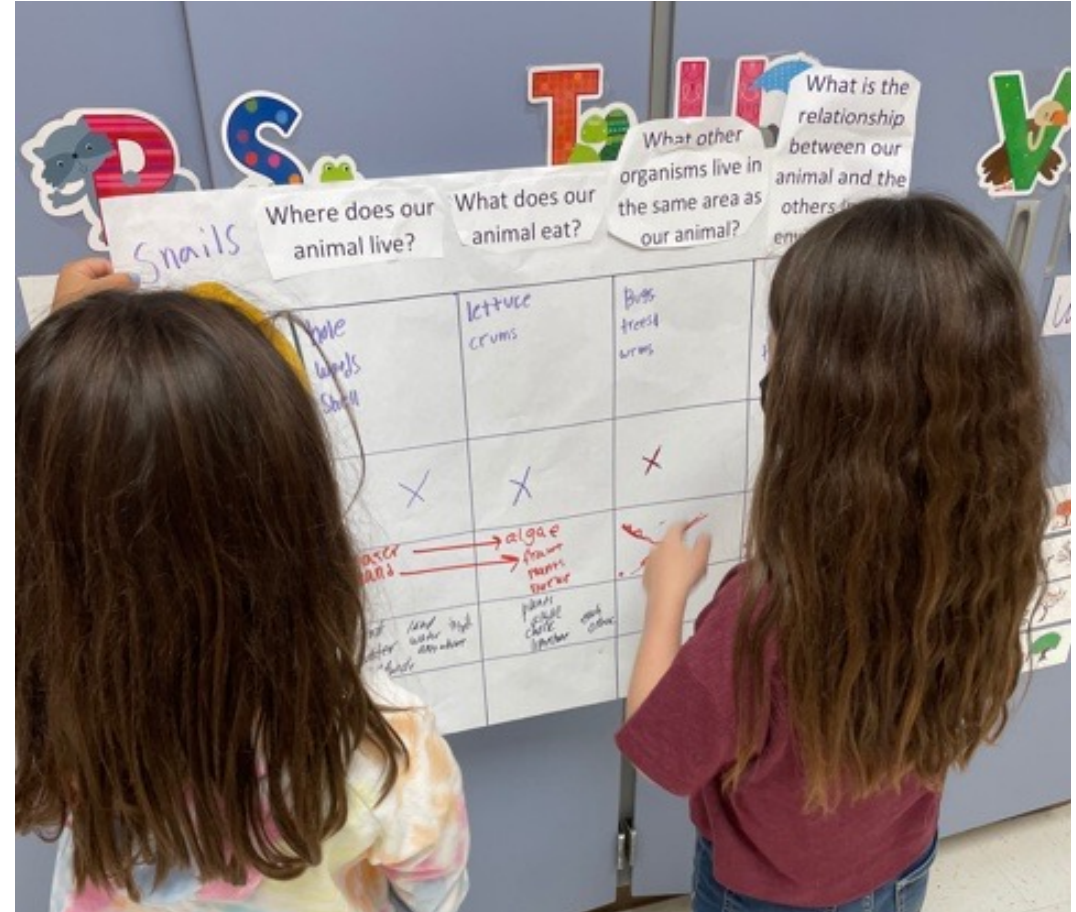
INQUIRY CIRCLE GROUPS OVERVIEW

- Choosing a topic from the list of recommended topics (on website)
- Portal/Exploratory texts (on website)
- Collecting text-based information
- Recording text-based information
- Helpful organization tips
- Culminating product



GROUPING

- Learners may work in groups you have already formed in your classroom.
- Or, grouping can be based on learners'
 - Shared interest in a topic
 - Prior knowledge or experience with a topic
 - Motivation to work independently
 - Diverse perspectives
- Learners may be in the same inquiry circle groups as their science inquiry groups, or you may choose to reassign groups.



PORTAL/EXPLORATORY TEXTS



Learners will explore a variety of texts in order to choose their topic.



A portal/exploratory text is an engaging text intended to spark the interest of your learners.



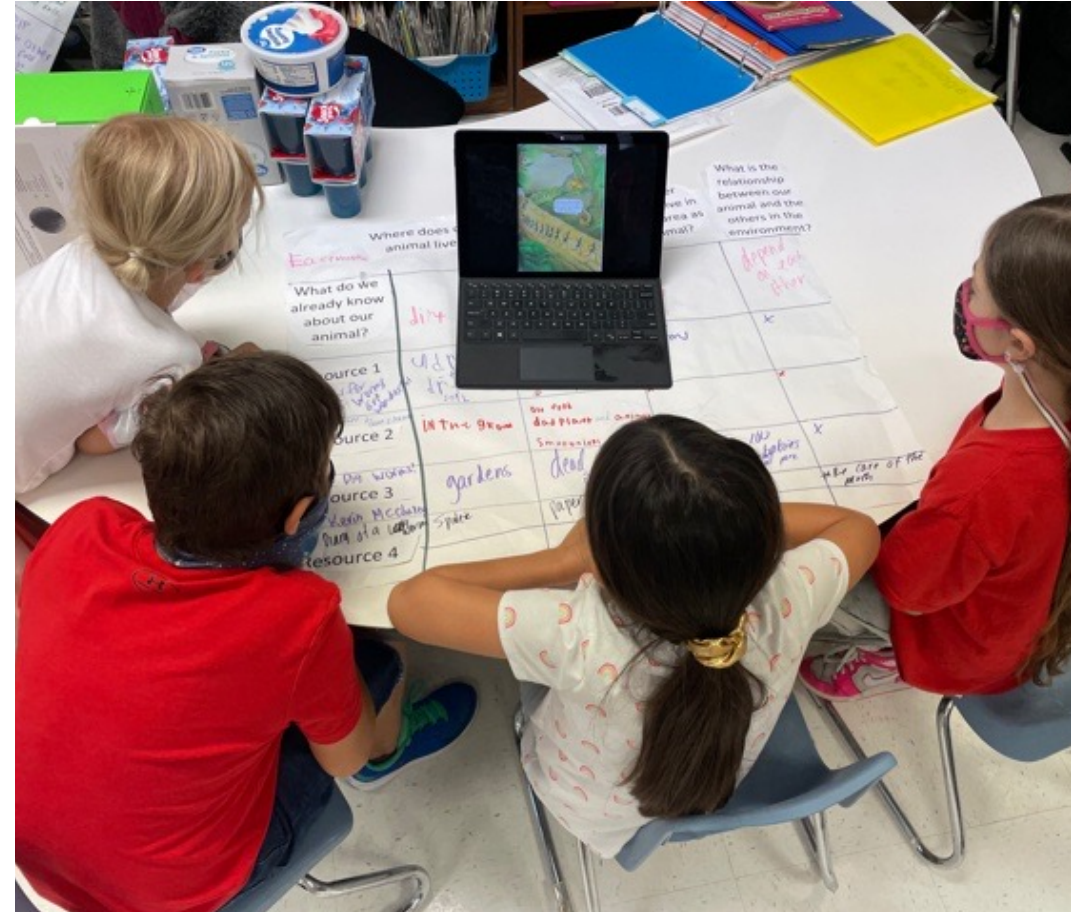
A list of sample portal/exploratory texts can be found on the project website, or you may choose others.



Portal/exploratory texts are explored by learners in their inquiry circle groups prior to starting the inquiry.

SMALL GROUP INQUIRY

- Learners will engage in small-group inquiry about their topic.
- We have provided a list of possible expository texts, websites, and online books, or you may find other resources you wish to make available.
- If you wish to include different expository texts, please look for
 - a variety of text features
 - appropriate reading level
 - current and accurate information
 - colorful photos or scientific illustrations





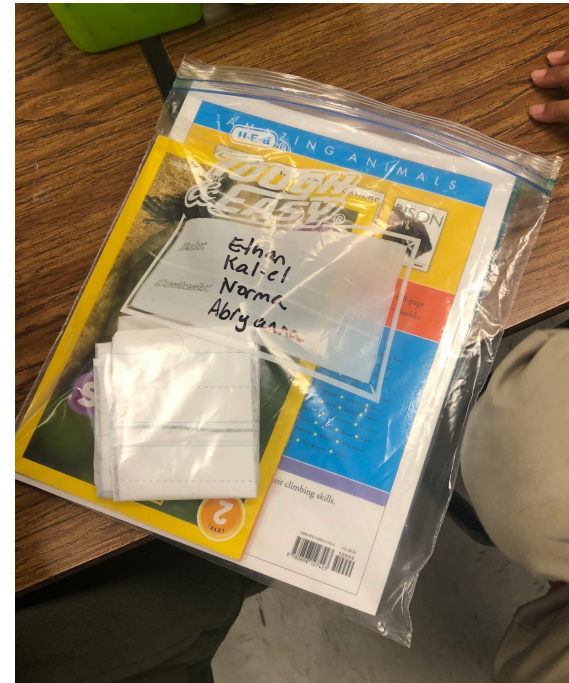
INQUIRY CHARTS

- An inquiry chart is a text-based way to record and organize information that learners discover about their topic, as well as the sources they used.
- The information in the chart will guide learners as they record text-based information and summarize, synthesize, and create a culminating project.

Name of Group Members and Plant Group	What does your plant look like throughout its life cycle?	What type of environment does your plant thrive in?	What features of our plant allow it to survive and thrive in its habitat?	What are the characteristics of your plant that make it a _____? Why does it belong in this group and not one of the other groups?	Other Interesting Facts
What we know					
Source 1 (Books: Title and Author Websites: Name and Web Address)					
Source 2 (Books: Title and Author Websites: Name and Web Address)					
Source 3 (Books: Title and Author Websites: Name and Web Address)					

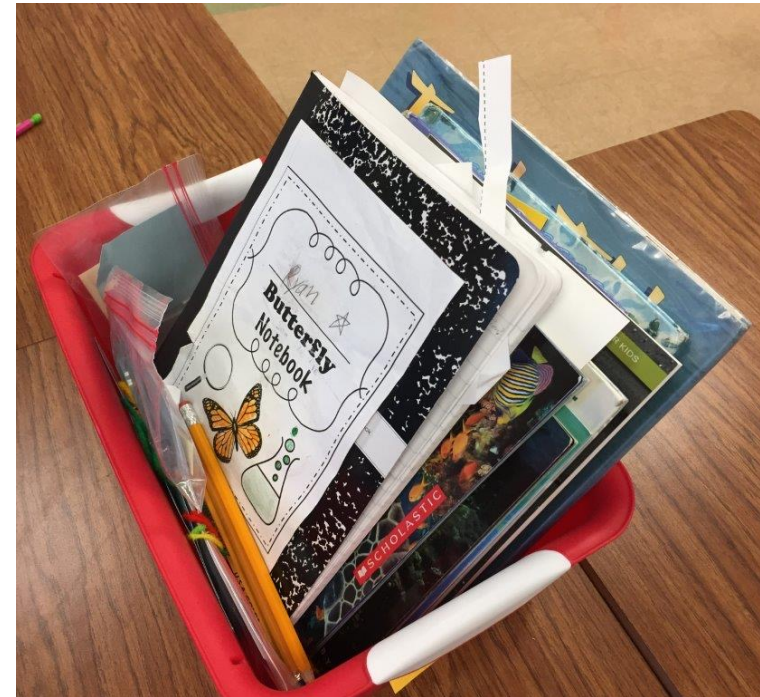
HELPFUL ORGANIZATION TIPS

Books and inquiry charts for each inquiry circle group can be stored in a gallon-size ziplock bag.



HELPFUL ORGANIZATION TIPS

Books, inquiry charts, and student notebooks can be stored in a basket or bin.



HELPFUL ORGANIZATION TIPS

Open-faced bookshelves can be used to organize and display the informational texts for each inquiry circle group.



CULMINATING ACTIVITY

Inquiry circle groups will create and present an informational book about their topic.

Individual group members will create a biography page as part of the group product (book).



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Science Investigations



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Overview

- Over the course of the next three weeks through teacher-facilitated explorations, children will plan and conduct investigations as members of scientific teams.
- Working within assigned roles, they will each contribute to the overall team process of scientific inquiry as they investigate how plants have adapted to living in changing environments, both past and present. They will do so using text information and engaging in active learning.
- Developing an understanding of how scientists work collaboratively toward a shared goal also enhances learners' understanding of the nature and methods of science.



What's the Big Idea?

Fossils provide a geological and biological record of the organisms and environments that have existed on Earth for millions of years.

Learning more about the different groups of plants that have existed (and still exist) on Earth develops understanding about the relationship between plants and the environments they live in.



What do we want students to...

understand?

- Living organisms interact with each other and the environment.
- Living organisms have structures and behaviors that help them survive in their environments.
- Changes in an environment over time can cause changes in the types of plants and animals that live there.

know?

- Fossils provide information about organisms that lived in Earth's environments through time.
- Fossils can be plant or animal.
- There are different ways that fossils can form (casts, mold, impressions, etc.).
- Over time, plant populations have made structural adaptations to survive and succeed in different environments.

What do we want students to...



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be able to do?

- Describe the relationship between plants and their environments.
- Identify adaptations plants have made to survive.
- Construct an argument using fossils as evidence of the organisms and environments that existed long ago.

Science Investigation

We will use live plant specimens and plant images to . . .

- Develop a question to investigate.
- Make observations and collect/organize data.
- Communicate observations.
- Make a claim and provide evidence to dispute or support the claim using authentic data.





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Lessons Overview

- The "Before the Unit Begins" file includes important information about what you need to prepare ahead of time, **before Day 1**.
- It includes directions for preparing the fossil dig and a "Science at a Glance" checklist that gives a snapshot of what you need to prepare for each day. Be sure to consult the lesson for full instructions!
- Each daily lesson begins with an overview of what students will be doing that day. Guiding questions are provided.
- Background information related to the lesson is provided **for the teacher**.
- Materials lists and instructions for setup are provided.
- You will receive the materials needed for conducting the lessons, as well as all digital resources.
- Safety rules point out potential hazards.



Lessons Overview

- Lessons are structured in a 5E format.
- **Please read over each lesson ahead of time!** Some will require setups that must be done before the lesson.
- You will receive a voucher to purchase live plants from Carolina Biological. Order them with plenty of time to begin the unit.
- TEKS and NGSS standards are provided for each lesson.

Lesson Summaries

Days 1–3: Fossil dig! We are paleobotanists! Observe, explore, analyze.

Day 4: How fossils form; making mold and cast fossils; segue from fossils to investigating modern-day plants.

Days 5–10: Observations using live specimens and photo images of plants; compare & contrast; look at the “big picture” of change over time

Days 11–12: Identifying fossils! Apply what you have learned, making claims, citing evidence.

Days 13–15: Culminating Project





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TIMELINE AND OVERVIEW

OVERALL FIELD TEST TIMELINE

Feb 4–16: **Complete Materials Request Form.**

- Upload stipend forms

Feb 7–23: **BCM will mail all classroom materials needed.**

Feb 18: **Website with lessons and resources goes live.**

Feb 23–April 8: **Teach the lessons and complete forms over a 15-day period.**

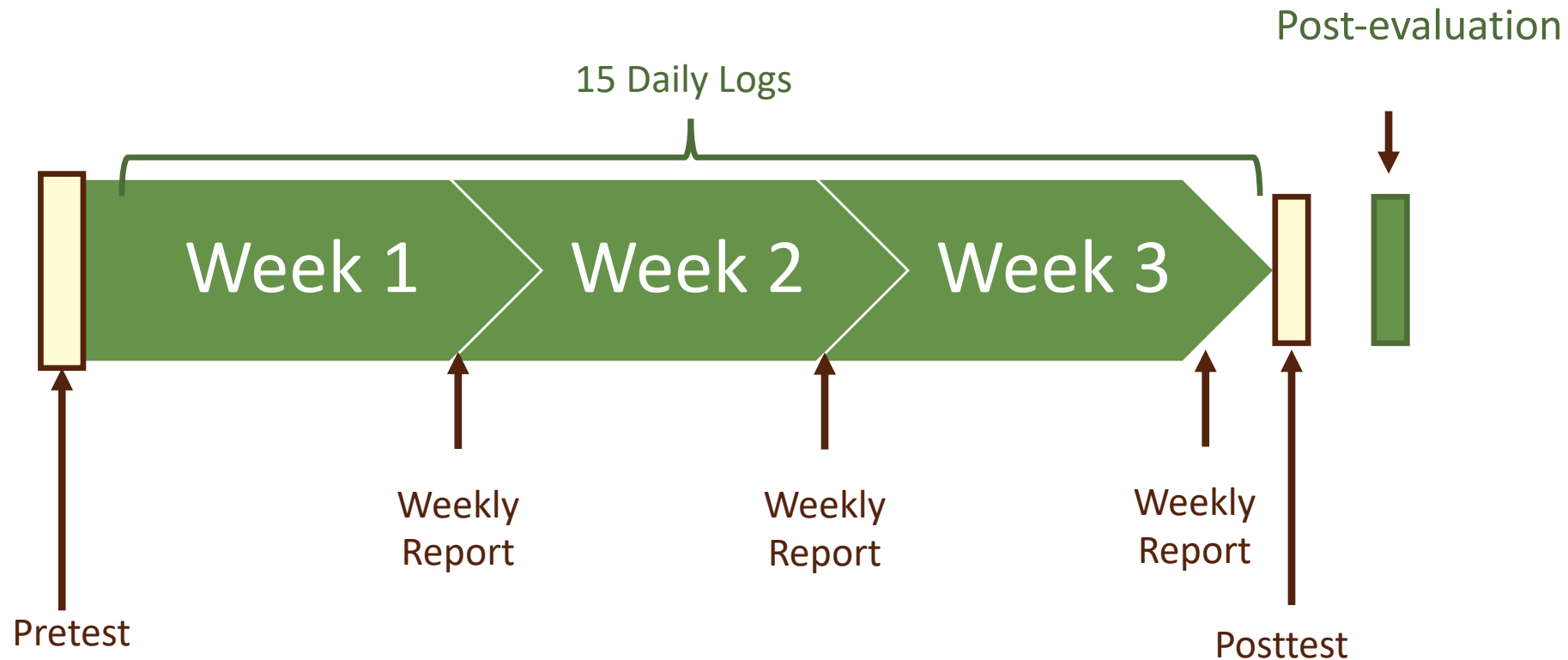
- Learner Forms: Pretests, Weekly Reports, Posttests
- Teacher Forms: Daily logs

Mar 11–April 29: **Mail or upload forms to return to BCM.**

Mar 11–April 29: **Complete the post-evaluation.**

TEACHING TIMELINE

- Choose 15 consecutive classroom days to teach the lessons (February 17– April 29).



EXAMPLE TIMELINE

SUN	MON	TUE	WED	THU	FRI	SAT
30-Jan	31-Jan	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb
6-Feb	7-Feb Complete Materials Form	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb
13-Feb	14-Feb Receive materials	15-Feb	16-Feb	17-Feb	18-Feb Access Website	19-Feb
20-Feb	21-Feb Pretest Log	22-Feb Log	23-Feb Log	24-Feb Log	25-Feb Report 1 Log	26-Feb
27-Feb	28-Feb Log	1-Mar Log	2-Mar Log	3-Mar Log	4-Mar Report 2 Log	5-Mar
6-Mar	7-Mar Log	8-Mar Log	9-Mar Log	10-Mar Log	11-Mar Report 3 Posttest Log, Post-eval	12-Mar

After completion, mail or scan all items to return; complete online post-evaluation.



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DATA COLLECTION AND MATERIALS

TEACHER PROJECT ID NUMBER

You will use a unique, 8-digit ID number for all of your forms.



First 4 digits of your driver license #

+

2-digit birth month

+

2-digit day of birth

=

Project ID #
1000



FIELD TEST MATERIALS

Project Binder

- FedEx info (return slip, envelope, shipping label)
- Attendance Form
- Student pretests
- 3 Weekly Reports
- Student posttests

Materials Kits

- Student pages
- Activity materials for student work

Lessons

- Will be on project website (link will be emailed)

Location

(if pick-up desired):

J.P. McGovern Campus
2450 Holcombe Blvd.,
Houston 77021



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RETURN SLIP

- Record your ID Number.
- Use the check boxes to ensure you have returned all necessary forms.
- Include as first page, whether you scan and upload or FedEx us your forms.

Form Return Packing Slip

Please include this slip in your FedEx envelope when you return your forms!

Your Project ID is created from a combination of your driver license and birthdate. Following the formula under the lines, please record your Project ID number in the box below.

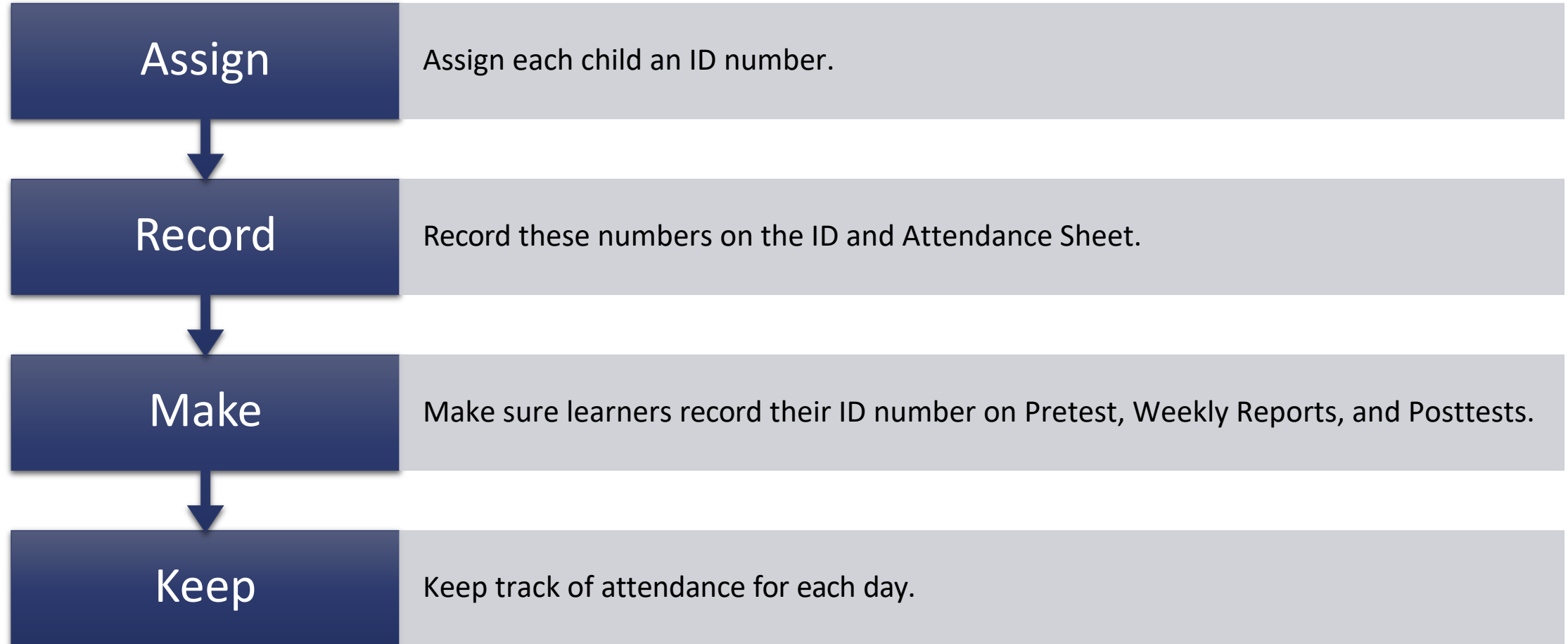
Teacher Project ID: _____
(First 4 characters of driver license, 2 digits birth month, 2 digits birthday)

The following items should be in your FedEx Envelope to return to BCM:

<u>Form</u>	<u>DATE</u>
<input type="checkbox"/> THIS PACKING SLIP with dates of tests and reports	N/A
<input type="checkbox"/> Student ID and Attendance Sheets with student names removed	N/A
<input type="checkbox"/> Student Pretests	Date: _____
<input type="checkbox"/> Student Week One Reports	Date: _____
<input type="checkbox"/> Student Week Two Reports	Date: _____
<input type="checkbox"/> Student Week Three Reports	Date: _____
<input type="checkbox"/> Student Posttests	Date: _____



LEARNER FORM INSTRUCTIONS



LEARNER ID NUMBERS ON ATTENDANCE SHEET

Assign each learner an ID number.

Keep attendance for each child on each lesson day.

ID number and Attendance Sheet

Please make sure this number is also recorded at the top of each student's PRE and POST Assessments and Weekly Reports.	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15
ID Number															
15	X		X												

Cut off name column before you send this sheet back to BCM.

These allow us to match pre- and posttests, so it is VERY important to complete these correctly.









Learner ID number goes here.

PRETESTS









Student Number: 15

Interdependence Among Organisms
Pretest

1. Circle the pictures that show living things.

 Cat	 Water	 Lady bug	 Trees
 Fish	 Crayons	 Car	 Ice cream

2. Circle the pictures that show non-living things.

 Hat	 Dog	 Pencil	 Flower
 Worm	 Owl	 Pizza	 House

- Each child gets one packet.
- Learner ID number is recorded at top.
- You may read items to class if needed, but please don't discuss answers!
- Give on or before 1st day of lessons.
- Record date on Return Packing Slip.



LEARNER'S WEEKLY REPORTS

Student Number 15

Week One Report

This week you have been a scientist.
Write, draw, or write and draw about your time as
a scientist this week.

A red arrow points from the text "Make sure learner ID numbers are the same as on their pretest." to the number "15" in the student number field.

- Once each week. Please be sure to use the correct week!
- Make sure learner ID numbers are the same as on their pretest.
- Record date of each report on Packing Return Slip.
- Please do NOT coach children or let them collaborate!

POSTTESTS

Student Number:

15

Interdependence Among Organisms Posttest

1. Circle the pictures that show living things.



Cat



Water



Lady bug



Trees



Fish



Crayons



Car



Ice cream

2. Circle the pictures that show non-living things.

- The same as the pre-test—each child gets one packet
- Make sure the learner ID numbers are the same!
- Even if a child did not take the pretest, they should take the posttest.
- Record date on Packing Slip

COMPLETING ASSESSMENTS

CORRECT

- An answer
- An answer
- An answer
- An answer



GOOD =

Clearly, completely filled in bubbles

INCORRECT

- An answer
- An answer
- An answer
- An answer

Stray marks

- An answer
- An answer
- An answer
- An answer

Too light

- An answer
- An answer
- An answer
- An answer

Marks outside of bubbles

- An answer
 - An answer
 - An answer
- } All BAD!

Day 1 – Introduction to Being a Scientist

Blue - [Log out](#)

[Teacher Daily Log](#)

Lesson Downloads

[Lesson PDF](#)

DAY 1 Introduction to Being a Scientist			
Reading Strategy: Language of a Scientist and Introduction to Inquiry Circles		Science Concept: Team Building for Scientific Research (Scientists Work in Teams)	
Reading TEKS: 2.1D	Figure 19: Reading/Comprehension Skills F	ELPS: Speaking K-12, 19 TAC 74.4(c)(3) D	Science TEKS: 2(a) 1 2(b) 1(D, E)
Materials for Reading Mini Lesson: Chart paper, markers, nonfiction butterfly text to model strategy			
Materials for Inquiry Circle Groups: A list of organisms for research (frog, salamander, American alligator rattlesnake, sea turtle, hummingbird, penguin, coyote, bat, spider monkey, bee, praying mantis, butterfly) and a variety of nonfiction texts for each group (Go to project website); Science Team Roles (one copy of each role to display as a reference for students or create the class's own anchor char of team roles)			
Materials for Science Whole Group Lesson: Copy of "Memory Pictures" PowerPoint® file for projection, smart board or LCD projector and screen; notebook or lined paper (2 sheets per student, with an additional 2 sheets per team); and Science Team Roles poster. (See section for details.) You'll also create badges to help students identify their Science Team Roles (make sufficient copies of the Science Team Role Badges, cut them out—or have student cut them out, and use approximately 18 inches of string or yarn to create a lanyard for each badge).			
Content Vocabulary: Collaboration — Working as a team to accomplish a goal. Scientist — Person who is an expert in, or studying aspects of the natural or physical world. Team — Group of persons who work together to accomplish a goal. Data — Information collected to answer a question. Lab — Short for "laboratory," facility where scientific investigations are done. Life Cycle — Series of change undergone by an organism over its lifespan.			
Science and Literacy Connection: Often, scientists work in teams to research a topic and perform investigations They use scientific language while working together in the cycle of inquiry. Science			



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Website

- URL will be emailed.
- Lists of texts and organism resources.
- Digital versions of student handouts.
- Links to teacher logs and evaluations.

DAILY LOGS

Interdependence Among Organisms Lesson Evaluation Form

* 1. Please enter your Teacher Project ID below. This should be written down in the front of your binder. If you used the BCM suggested ID, the eight digits will be as follows:

First 4 digits of your driver license #, 2-digit birth month, 2-digit birth day.

* 2. Which set of lessons did you do today?

* 3. What is the date for today's lesson?

Date

Date

- URL on the project website.
- Please complete no later than 2nd day after teaching a lesson.
- Make sure your Teacher Project ID number is correct!
- Provide information to the best of your ability.
- Click “Done” on the final screen or it will not send!

OTHER INFORMATION YOU MAY NEED

- Overview Guide
- Project Participant Information Sheet

K–3 STEM Foundations Overview Guide for Teachers

Center for Educational Outreach, Baylor College of Medicine, Houston, Texas

Center for the Inquiry of Transformative Literacies, College of Education and Human Development, The University of Texas – San Antonio, San Antonio, Texas

Funded by a Science Education Partnership Award grant of the National Institute of General Medical Sciences (NIGMS), National Institutes of Health

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Field Test Version: Do not distribute, photocopy or forward this document for use at other locations.


RETURN TO BCM—SCAN AND UPLOAD

- Scan all forms, with your Return Packing Slip on the first page.
- Use Teacher Project ID number as the document name.
- Include packing slip with ID number!
- Upload link to the secure BCM Box is on the project website.

Submit your project forms here

Please submit all forms as a single PDF using your ID number as the title of the document.

Upload Form *

An icon representing file upload, showing a cloud with a plus sign and several document icons around it.

Drag and drop files

Select Files

Submit

RETURN TO BCM—FEDEX

**Interdependence Among Organisms
Field Test**

Form Return Packing Slip

Please include this slip in your FedEx envelope when you return your forms!

Your Project ID is created from a combination of your driver license and birthdate.
Following the formula under the lines, please record your Project ID number in the box below.

Teacher Project ID: _____
(First 4 characters of driver license, 2 digits birth month, 2 digits birthday)

The following items should be in your FedEx Envelope to return to BCM:

<u>Form</u>	<u>DATE</u>
<input type="checkbox"/> THIS PACKING SLIP with dates of tests and reports	N/A
<input type="checkbox"/> Student ID and Attendance Sheets with student names removed	N/A
<input type="checkbox"/> Student Pretests	Date: _____
<input type="checkbox"/> Student Week One Reports	Date: _____
<input type="checkbox"/> Student Week Two Reports	Date: _____
<input type="checkbox"/> Student Week Three Reports	Date: _____
<input type="checkbox"/> Student Posttests	Date: _____

Drop at FedEx by June 11, 2021.

- Prepaid envelope—just drop off at a FedEx box or location by April 29.
- DON'T send whole binder! Just send the forms listed on the Packing Slip.
- Include Packing Slip with ID number!



WRAPPING THINGS UP

- Post-evaluation: SurveyMonkey form:
 - Link will be on the website mid-March; Complete AFTER posttest.
 - Use your Project ID number (no names).
 - Tell us what worked, what didn't, what you changed, and what you would change if you taught it again.
- Mail back any paper forms in pre-paid FedEx envelope or upload digital forms to website by April 29th.
- We will confirm receipt of all materials and submit your stipend form to BCM Accounting.

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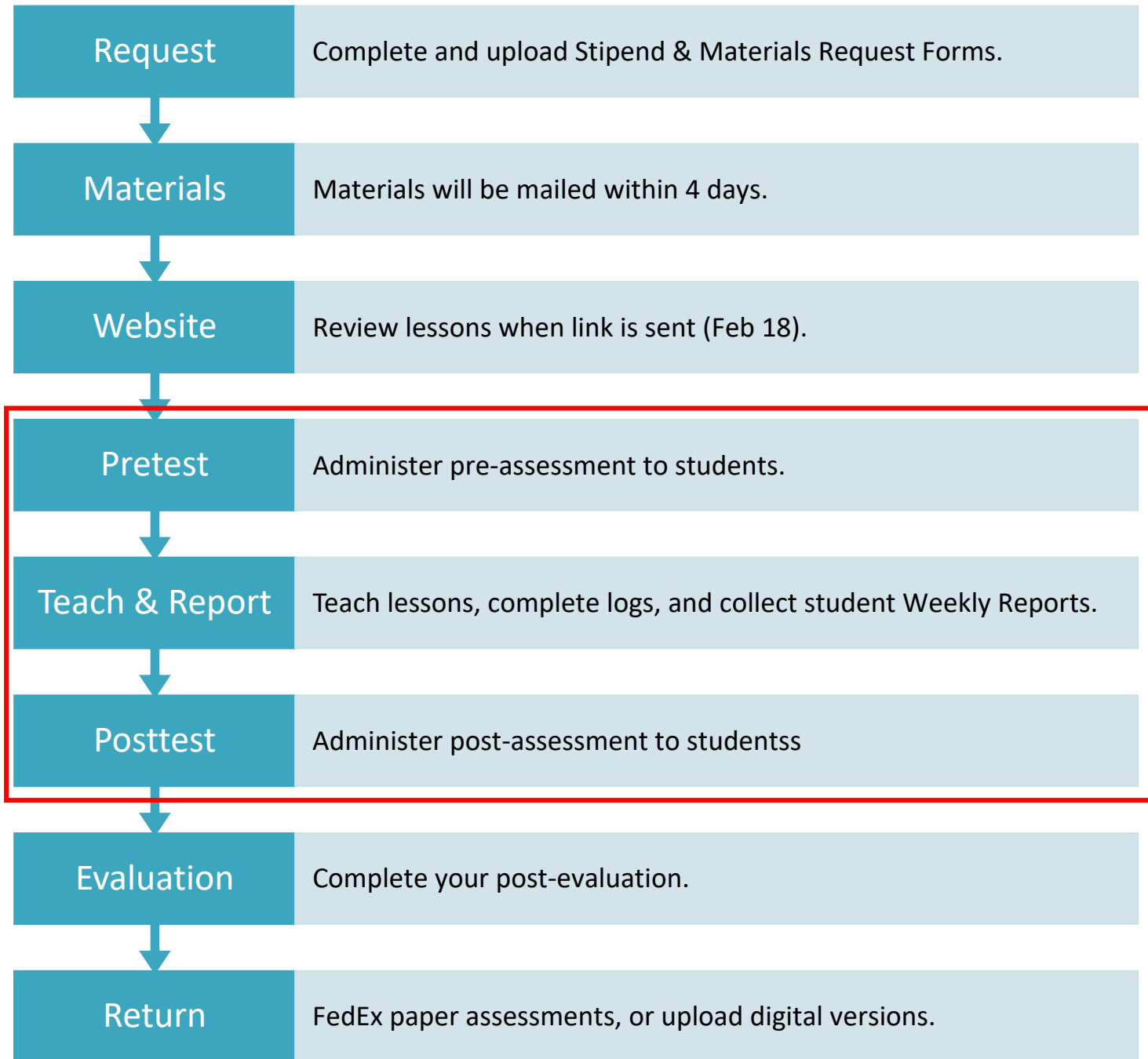
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SUMMARY

15 days





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QUESTIONS?