

## WARM-UP QUESTION AS PEOPLE ARRIVE

What does STEM look like in your library?

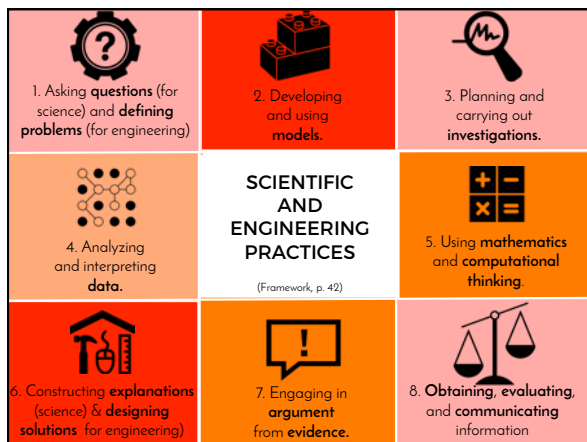
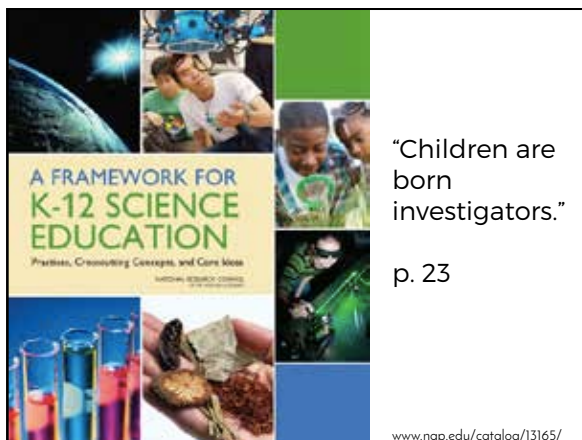
Post descriptions/photos to Twitter.

#bookliststem

"...in many ways our library STEM programs are such because they have a science, math, or engineering **theme**, more so than because they actually teach a STEM **concept**."

- Shannon Powers, "Foam Explosions and Non-Newtonian Fluids: Are We Teaching STEM?" in Fontichiaro, Kristin. (2015). Information Literacy, or How I Learned to Stop Worrying and Love Library Instruction. Retrieved April 6, 2016, from <https://www.smashwords.com/books/view/601117>

So what are the **concepts**?



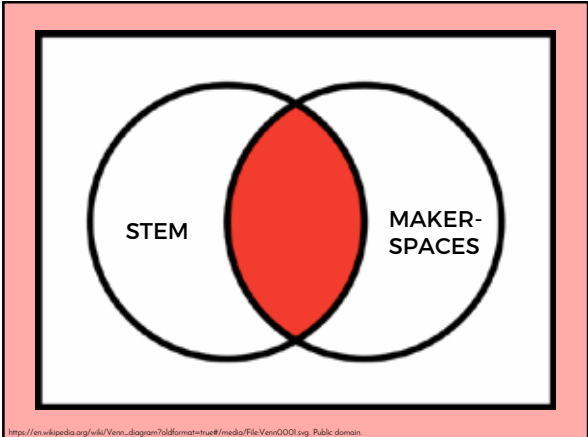
**Ambient STEM**  
(handout at <http://bit.ly/ambient-stem>)

- ### Ambient STEM: Big Ideas
- Puts the everyday materials of science, technology, engineering, and math in the path of kids in your library
  - Makes materials available when inspiration strikes you or your students/patrons
  - Is intentionally open-ended, remixable, exploratory
  - May (or may not) be accompanied by explanatory placards to entice questions, provoke activity, or jumpstart parent/child communication

**EXAMPLE: HOW MIGHT YOU USE SPIDER PLANTS TO PROVOKE QUESTIONS AND OBSERVATION? #bookliststem**



Spider plant stolon 2.jpg by Eptalon on Wikimedia Commons. CC-BY-SA-3.0. [https://commons.wikimedia.org/wiki/File:Spider\\_plant\\_stolon2.jpg](https://commons.wikimedia.org/wiki/File:Spider_plant_stolon2.jpg)



**RESEARCH**

**BIG IDEAS**

Move from fact-finding  
to **robust questions**

Engage the **senses**

**INQUIRY**

- Pre-search is critical to move beyond superficial "how many legs" questions
- Use photos, video, simple texts to provoke resonant questions

**SEE-THINK-WONDER**

“Man, woman, two children.” Do not say “Family.” They could be two teachers and two students! Later, you might use clues to decide if they are a family. This is called **inferring**.

2. **What do you THINK?** This is when you can infer things using clues in the image. What do you think is happening in the image? Is someone shouting out? Being serious? Barging in on her?

3. **What do you WONDER?** What new questions do you have?

Look at the photo on the next page. This is a photo from the U.S. National Archives. What do you see, think, and wonder? Write your “see,” “think,” and “wonder” notes on a green.

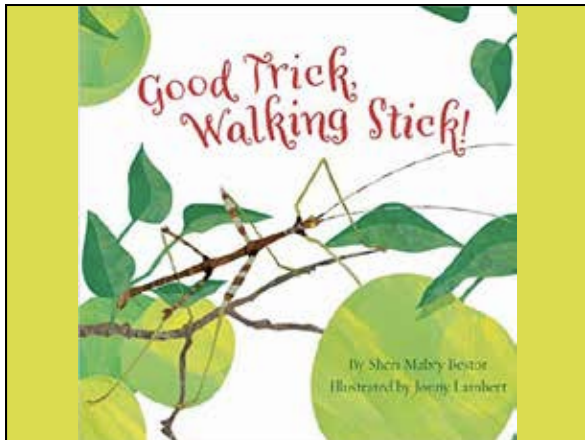
Got with a camera  
I bet she is outside all day.  
What season is it?

Soil  
Where is she going?  
How long has she been walking?

Bare feet  
I think she needs money.  
Why doesn't she wear shoes?

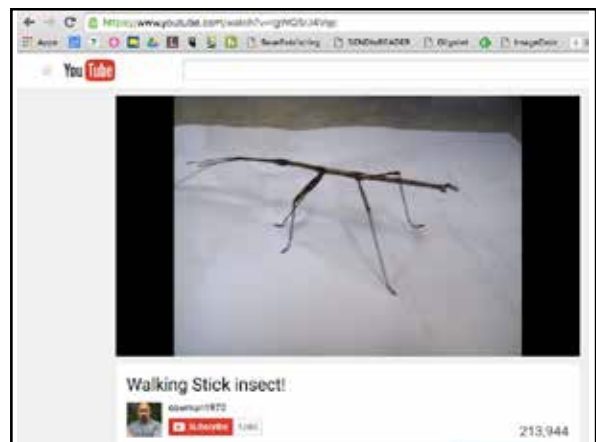
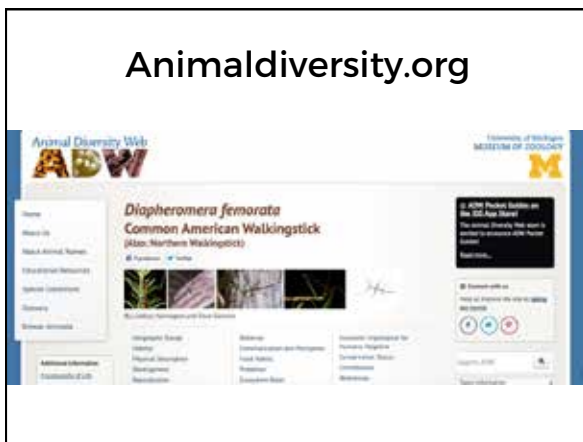
2 big boxes  
The boxes seem heavy.  
How much would they weigh?  
What is in them?





## PRIOR TO EVENT

- Get your enthusiasm and knowledge up!
  - find intriguing facts, photos, videos
  - Learn if it is native to your area

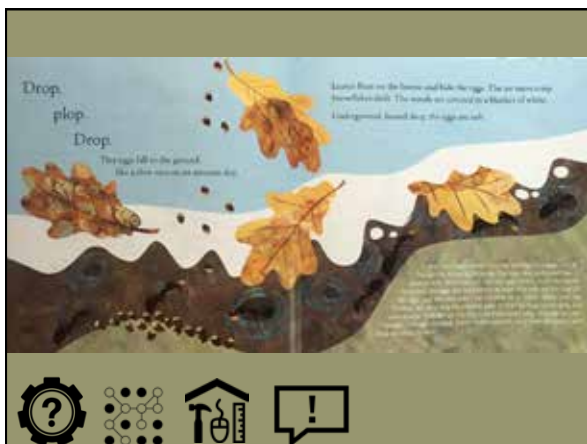


## AT START OF EVENT

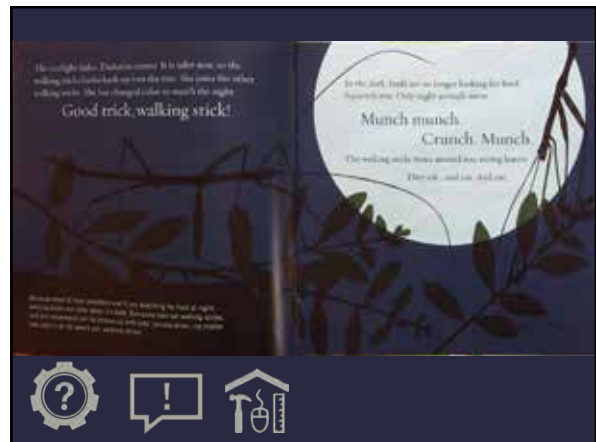
- Establish that walking sticks are real! This is not a made-up story - these kooky critters are real!
- Show some photos and video
- Ask for questions
- Get students attuned to this being an engaged experience, not a passive one

## DURING READING

- Pause to discuss, ask questions
- Reach for some Ambient STEM tools to help make these new ideas concrete









## AFTER READING

- Scribe list of questions (K-W-L?) on large chart paper or white board
- Possibly new books or videos to see how many questions can be answered
- Have a scribe (or let children scribe) pictures/text to show what has been learned

## RESEARCH

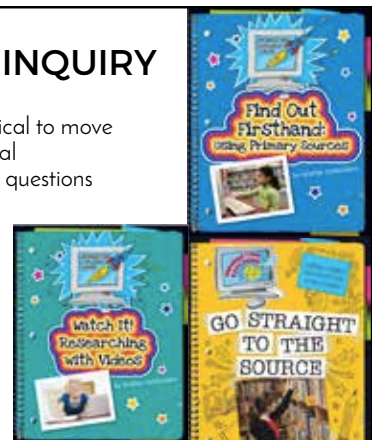
## BIG IDEAS

Move from fact-finding  
to **robust questions**

Engage the **senses**

## INQUIRY

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## SEE-THINK-WONDER

"Man, woman, two children." Do not say "Family." They could be two teachers and two students! Later, you might use clues to decide if they are a family. This is called **inferring**.

2. What do you **THINK**? This is when you can infer things using clues in the image. What do you think is happening in the image? Is someone showing off? Being serious? Berating his bat?

3. What do you **WONDER**? What new questions do you have?

Look at the photo on the next page. This is a photo from the U.S. National Archives. What do you see, think, and wonder? Your responses will be "see," "think," "wonder," "infer," and "wonder."

Get with a partner  
I bet she is outside all day.  
What season is it?

I see  
Where is the going?  
How long has she been walking?

Some fruit  
I think she needs money.  
Why doesn't she wear a hat?

I big boxes  
The horse seem heavy  
How much would they weigh?  
What is in them?

## Kindergarten

**Write 8.1. Use a combination of letters, drawing, and simple sentences to describe what you see in a picture. Write about what you are doing, how you feel, and what you think about the picture.**

**Key Words:** Write 8.1. Use a combination of letters, drawing, and simple sentences to describe what you see in a picture. Write about what you are doing, how you feel, and what you think about the picture.

**Resources:**

- 1. Use a combination of letters, drawing, and simple sentences to describe what you see in a picture. Write about what you are doing, how you feel, and what you think about the picture.
- 2. Write about what you are doing, how you feel, and what you think about the picture.
- 3. Use a combination of letters, drawing, and simple sentences to describe what you see in a picture. Write about what you are doing, how you feel, and what you think about the picture.
- 4. Write about what you are doing, how you feel, and what you think about the picture.
- 5. Use a combination of letters, drawing, and simple sentences to describe what you see in a picture. Write about what you are doing, how you feel, and what you think about the picture.

**New Words:**

1. Use a combination of letters, drawing, and simple sentences to describe what you see in a picture. Write about what you are doing, how you feel, and what you think about the picture.

## LINGER with question development

- As students get older, move from **closed** to **open-ended** questions
- (less who, what, where, when, more **WHY** and **HOW**)

## QUESTIONS? IDEAS? STRATEGIES?

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Thanks to Tim Corrigan for suggesting the Framework as a lens for this webinar.

AMBIENT STEM

STORYTIME

RESEARCH PROJECTS

## Framework images

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