

Hooked on Earthworms: High interest activities to drive sensemaking

Jodi Wheeler-Toppen, Ph.D.

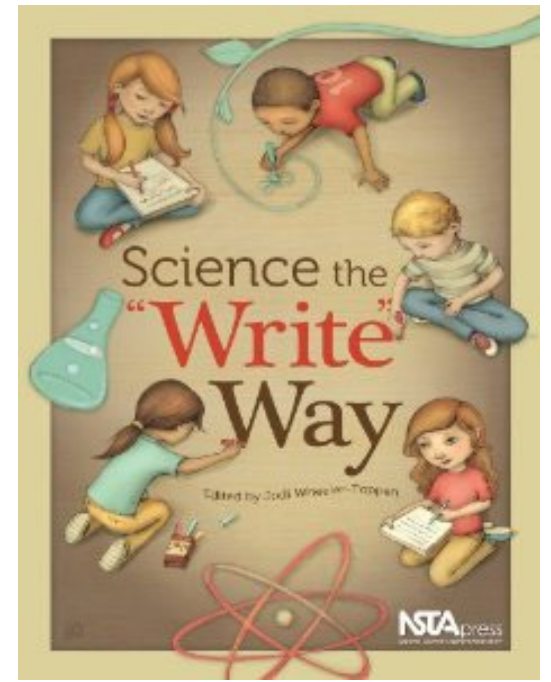
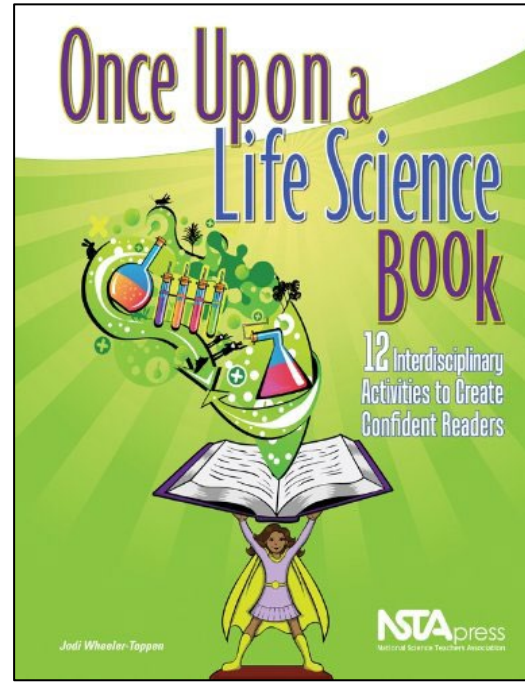
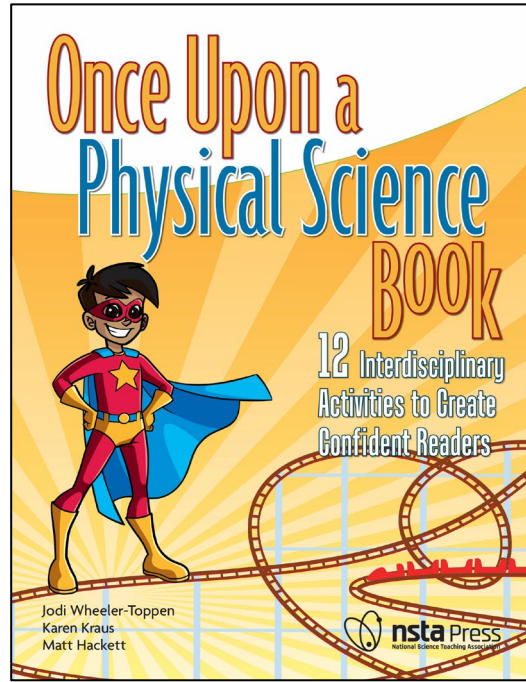
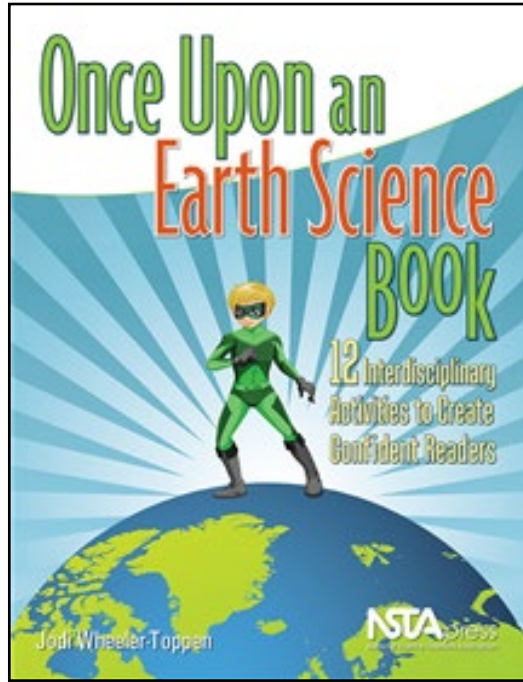


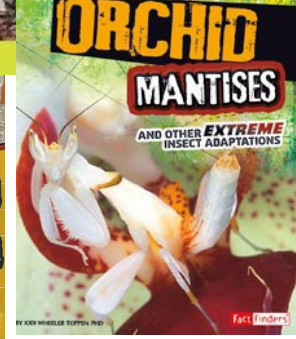
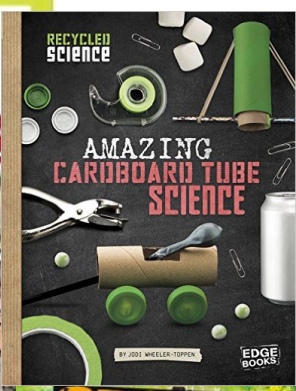
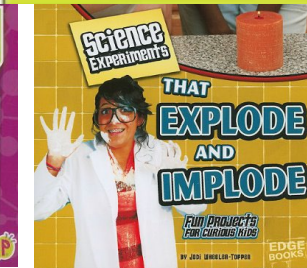
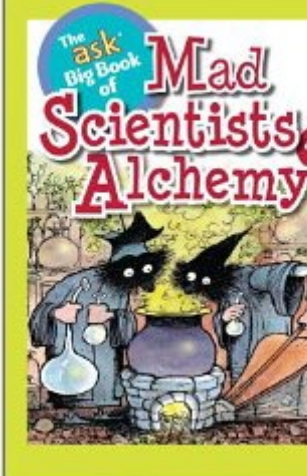
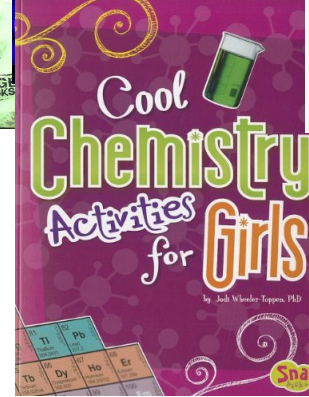
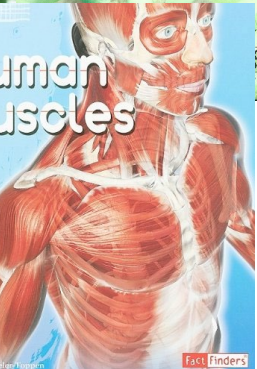
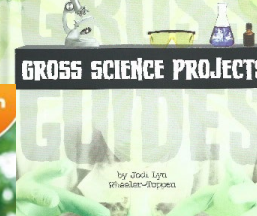
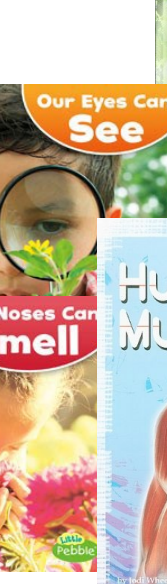
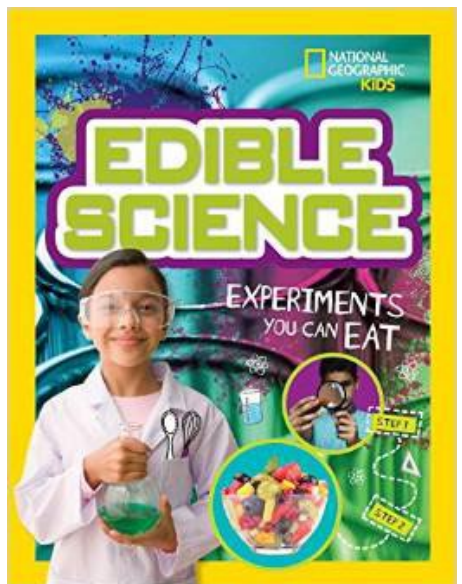
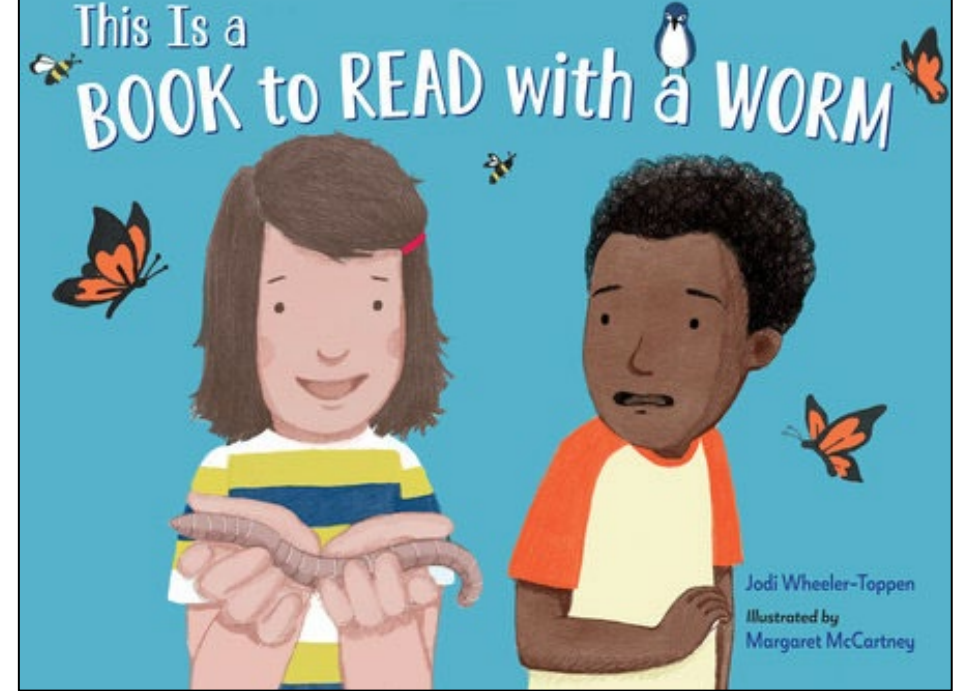
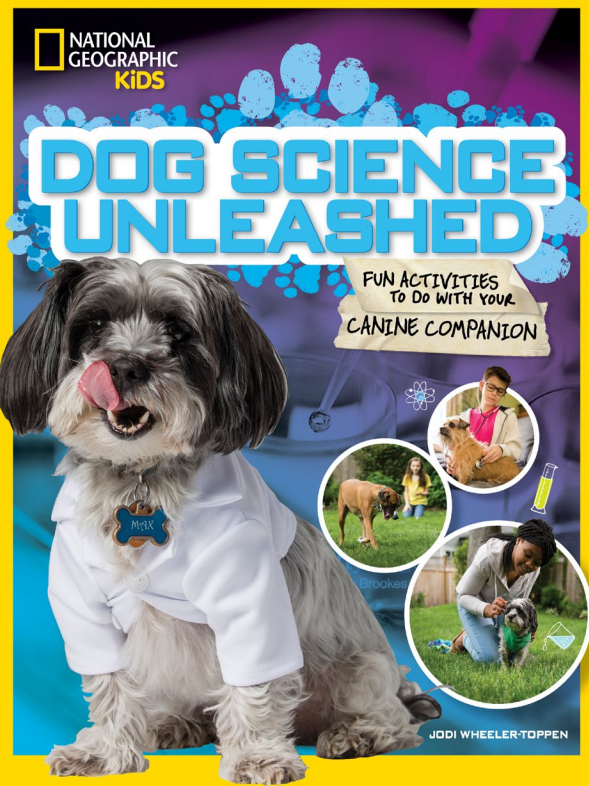
This Is a BOOK to READ with a WORM



Jodi Wheeler-Toppen
Illustrated by
Margaret McCartney

- Winner of the AAAS/ Subaru SB&F Prize, Hands- on Category



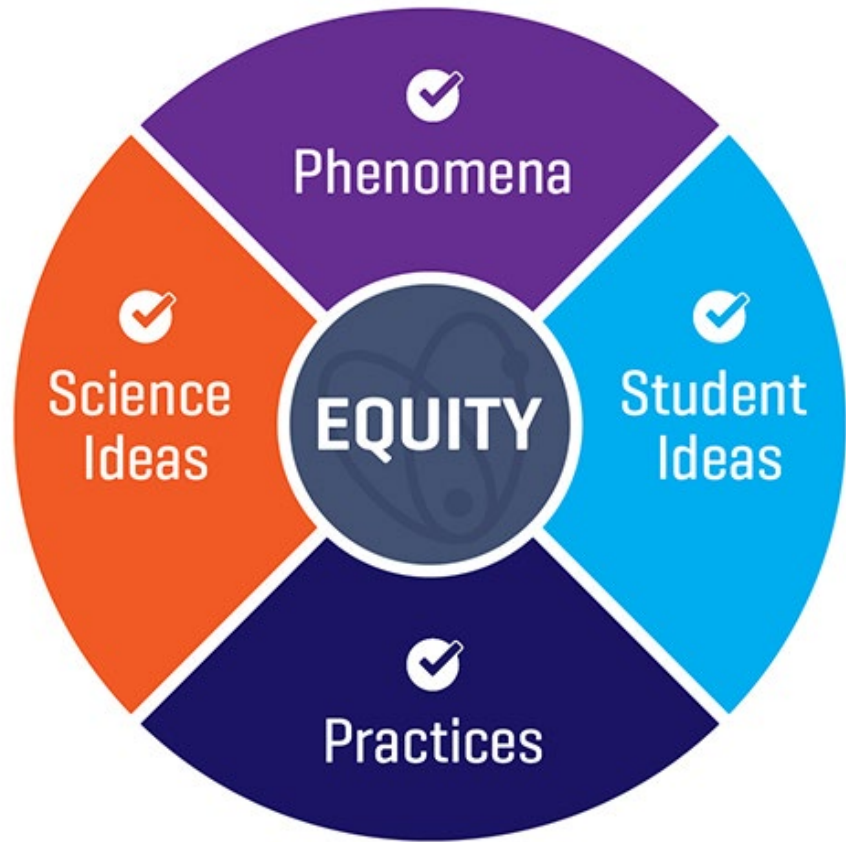


An open book is shown from a top-down perspective, lying flat. The pages are a warm, yellowish-tan color, suggesting age. In the center of the book, two pages are folded inward to form a heart shape. The background is a soft, out-of-focus gradient of light blue and white. The title 'Agenda' is printed in a clean, black, sans-serif font in the upper right quadrant of the image.

Agenda

- Read (and play!) through the book together
- Example of how activities in the book can be re-packaged to support sensemaking
- Finding other ways to support sensemaking with worms (your turn!)

Sensemaking

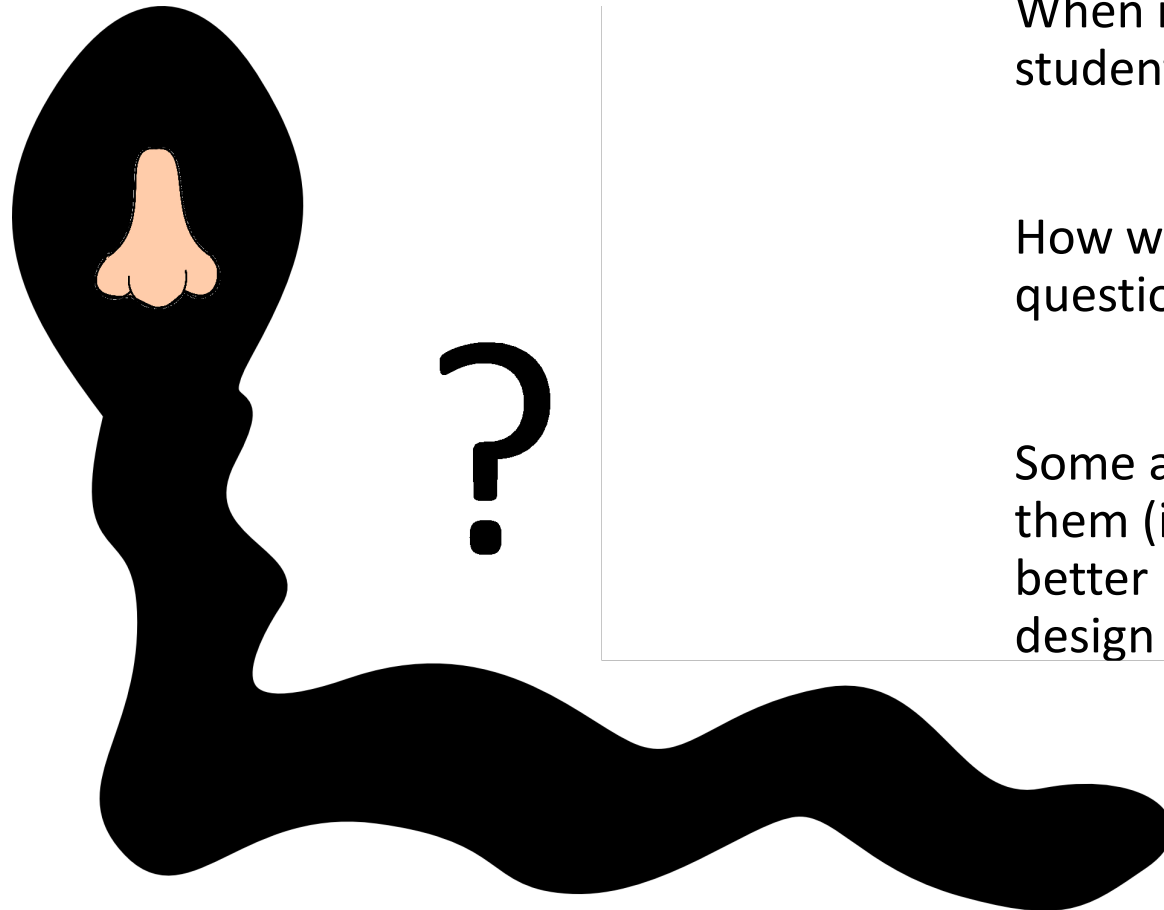


- Students interact with phenomenon (using scientific practices such as data collection/ observation)
- Students are introduced to relevant science ideas
- Students construct an explanation/ argument for the phenomenon (using scientific practices around evidence and communication)

Sensemaking lessons look like learning cycles with extra attention to providing time and scaffolding for student *talk* and *idea development*.

<https://www.nsta.org/sensemaking>

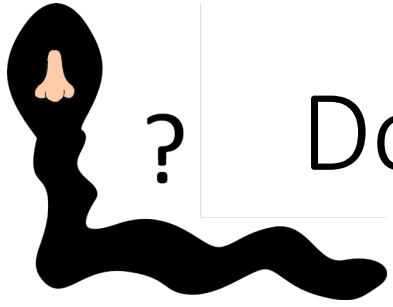
Does a worm have a nose? Can it smell?



When might you explore this phenomena with your students? (In what unit, topic, etc.?)

How would you get started engaging them with the question?

Some activities work best if students have helped “design” them (in the sense that they will understand the idea better if they do.) How could you scaffold students to design a test for if worms can smell?



Does a worm have a nose? Can it smell?

- What data would you expect them to collect?
- What steps would you take to help student think through the meaning of their data? (This could involve talk, writing, drawing)
What scaffolding will they need?
- When would you want to introduce the science ideas?
- How will they demonstrate their final ideas? What scaffolding will they need?

Does a worm have a nose? Can it smell? Rough Instructional Sequence:



HAVE STUDENTS EXAMINE WORM'S "FACE" AND DISCUSS WHAT IS SIMILAR OR DIFFERENT FROM OUR FACE. ASK WHAT SENSES SEEM TO BE MISSING.

ASK STUDENTS TO PROPOSE WAYS TO SEE IF A WORM CAN SMELL. (COULD SCAFFOLD BY ASKING HOW WE COULD FIGURE OUT IF A PERSON COULD HEAR). OFFER DRY ERASE MARKERS AS ODOR.

HAVE PAIRS DISCUSS: IF WE PUT A DRY ERASE MARKER IN FRONT OF A WORM'S FACE, WHAT WOULD WE EXPECT TO SEE IF IT COULD SMELL IT? WHAT IF IT COULDN'T SMELL IT?

TEST THE WORM'S REACTION IN PAIRS. RECORD RESULTS AND PUT ON THE BOARD.



DISCUSS AS A CLASS: DID THE WORM SMELL IT OR NOT SMELL?

READ SHORT SECTION ON ODOR DETECTION IN WORMS. DOES THIS SUPPORT OUR IDEAS? WHY OR WHY NOT? (DISCUSS WITH PARTNER AND REPORT TO GROUP.)

DRAW A 3-PANEL CARTOON SHOWING THE WORM'S RESPONSE TO THE MARKER. CAPTION EACH BOX. INCLUDE WHAT WE LEARNED FROM THE READING ABOUT ODOR DETECTION IN WORMS! (PROVIDE SENTENCE SCAFFOLD IF NEEDED)

Your turn!

Work with 1 or 2 people around you.

Flip through the book. What activity(s) might support a topic that you (or others in your group) teach?

Roughly design an instructional sequence around that activity(s) that would involve students in sensemaking.

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