CURIOSITY MEETS THE PRINTED PAGE

Jodi Wheeler-Toppen
wheelertop@gmail.com
OnceUponAScienceBook.com

Heather L. Montgomery
sipsey21@hotmail.com
HeatherLMontgomery.com
Jodi’s Books
INTRODUCING OURSELVES
*Thanks to NOAA for bringing my childhood memory back to life online: [https://games.noaa.gov/mix_match/](https://games.noaa.gov/mix_match/)
Words

Structure

Topic (and research)

Market
How would you categorize these books?

- 5 stickies
- 5 minutes
- GO!

Fiction / Nonfiction

Picture Book / Chapter Book / Young Adult

Lyrical, Inquiry, Informative

Trade / Educational
CATEGORIZE LIKE AN EDUCATOR

Informational Text Structures

**Description**
- **Signal Words:** such as, for instance, in addition, also, specifically
- **Tips:** Ask yourself: what specific person, place, thing, or idea is being described? Look for a topic word or phrase and for synonyms.

**Problem and Solution**
- **Signal Words:** problem, issue, since, as a result, solution, idea, so, leads to, causes
- **Tips:** Ask yourself: what is the problem and what is the solution? Look for the problem first and then the solution.

**Compare and Contrast**
- **Signal Words:** similar, same, alike, both, as well as, unlike, as opposed to, on the other hand, in contrast, instead
- **Tips:** Ask yourself: what is being compared? How are they the same? How are they different?

**Cause and Effect**
- **Signal Words:** since, because, if, due to, as a result of, causes, leads to, consequently, then, therefore
- **Tips:** Ask yourself: what happened and why did it happen? Remember, you are looking for a cause, not a solution.

**Sequence**
- **Signal Words:** first, second, third, than, next, before, after, finally, following
- **Tips:** Ask yourself: Is this event taking place over time? Look for steps or references to time such as dates.

http://minds-in-bloom.com/free-informational-text-structures/
The Nonfiction Family Tree

Nonfiction

Active
Browseable
Traditional
Expository Literature
Narrative

http://celebratescience.blogspot.com/2017/12/behind-books-nonfiction-family-tree.html
HOW DO I CATEGORIZE?

Know the environment you are venturing into!

• Read 100 recent books.
• Select publishing houses that stand out.
• Close read everything you can by those publishers.

Host caterpillar of Meteorus-rugonasus-Pteronymia-zerlina-Hewitson-1.png
You need a strong set of legs, or you’re going to fall over.
TOPIC/ RESEARCH

Get as close to the source as you can.
CASE STUDY: MUDSKIPPERS

Natural History Magazine | Feature
By Heather J. Lee and Jeffrey B. Graham

September 2002.

Their Game Is Mud

Skipping and jumping across the shore at low tide, mudskippers give new meaning to the phrase “fish out of water.”

On the north-central coast of Australia, Periophthalmus minutus build mud tunnels at the entrances of their burrows.

Photo by Heather J. Lee

Fishes Out of Water
Biology and Ecology of Mudskippers
Edited by Zeehan Jaafar • Edward O. Murdy

Multivariate characterization of the habitats of seven species of Malayan mudskippers (Gobiidae Oxudercinae)

ORIGINAL PAPER

Communities...
Dear Dr. Polgar,

I am working on an article for ASK Magazine on animal adaptations that allow them to survive in unusual places. I plan to feature mudskippers and found your 2009 paper on Malayan mudskippers in Marine Biology to be very informative. I would like to follow up on some details from that article and also ask a few other questions about mudskipper adaptations. Would you be available for a brief (about 30 minutes) interview sometime in the next two weeks? If so, would you suggest some times, and also let me know what time zone you are currently in (I am on the east coast of the United States). Alternatively, if you would prefer, I could send a list of questions for you to answer by email.

I appreciate your time!

Sincerely,

Jodi Wheeler-Toppen

---

Jodi Wheeler-Toppen
www.OnceUponAScienceBook.com
VIDEO OBSERVATION: QUESTIONS TO CONSIDER

• What else is present besides your subject?
• What’s in the background?
• What sounds do you hear?
• What could you infer that you can check with your source? (the mud looks smooth—is it? Or is it gritty?)
• Describe what’s going on without trying to use good writing. Just capture the essence.
• List active verbs you could use.
• List other fun words or phrases that come to mind.
• What does it remind you of? What could you compare it to?
From nursing the feline patient:

The cat’s heart rate is considerably faster than the dog. A medium-sized dog has a rate of 60–160 beats per minute; the cat’s resting heart rate is 140–220 bpm.

- The QRS complex is often not as distinct as that of other species. Q waves are rare, and the ECGs of many cats have only an R wave or an S wave.
- The dog’s heart rate changes during the respiratory cycle (sinus arrhythmia) resulting in an increase in heart rate during inspiration and a decrease during expiration. However, there is no sinus arrhythmia in the cat. The intervals between heart contractions are regular and not influenced by normal breathing.

ECG Abnormalities

ECG abnormalities are commonly found in cats with asymptomatic heart disease. The most common are:

156

Normal respiration rates for an adult person at rest range from 12 to 16 breaths per minute.

The resting heart rate decreases as kids get older. Typical normal resting heart rate ranges are:

- babies (birth to 3 months of age): 100–150 beats per minute
- kids 1–3 years old: 70–110 beats per minute
- kids by age 12: 55–85 beats per minute

Page 38 cats also walk on their toes and description of claws retraction

There is much in this chapter on what helps them balance. I wonder about a broomstick dotted with tuna or other feat of balance

Case 41: An ear for balance: vestibular apparatus consists of 3 fluid filled semi-circular canals at approximately right angles to each other. Movement, changes in direction and speed slosh the water around, shaking tiny hairs that communicate with the brain. (How is this different from a human?)

Case 38: tail is important for balance
Case 41 extreme flexibility important for balance

Moving in Tight Spaces/ Easy does it:
Your cat eases across the board, carefully placing one foot in front of the other, keeping his feet almost in a straight line (Case 40). If he wobbles, he can fine-tune his body placement because the vertebra in his spine are less tightly connected (Case, 41) than yours. You may notice him crouched as he walks. This lowers his center of gravity, making it harder for gravity to pull him over. For some of his walk, you'll see his tail tensed and held low, but it can quickly swing to one side or the other to compensate for a shift (Case 38). In this way, he uses it as a tightrope walker uses a bar to help him balance on the high wire.
Easy Does It
Your cat eases across the board, carefully placing one foot in front of the other, keeping his feet almost in a straight line.\textsuperscript{10} If he wobbles, he can fine-tune his body placement more easily than a person, because the vertebra in his spine are connected to each other more loosely.\textsuperscript{11} Your cat may crouch as he walks. This lowers his center of gravity, making it less likely that he’ll fall over.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|}
\hline
Source & Range \\
\hline
Physical Examinations of dogs and cats. (Clinical guidelines provided to me by a practicing vet) & 20-40 \\
\hline
\end{tabular}
\end{table}

\textsuperscript{10} Sources were much more consistent on this.


• Don’t get ahead of peer review.
• Spend some time with the study.
  • How big was the sample size?
  • Do the results look meaningful? (not just “statistically significant”)
  • How does it fit with other research in the field? (look for review articles and opinions of other researchers in the field)
• Don’t get caught in a need for false equivalence.

“Science writers should support the healthy exchange of views and opinions in science, but also realize when scientific principles are no longer questioned by the majority of reputable scientists involved.” (National Association of Science Writers code of ethics)
Structure

Great ideas in the wrong shape don’t work.
MANY WAYS TO THINK ABOUT STRUCTURE

http://celebratescience.blogspot.com/2017/12/behind-books-nonfiction-family-tree.html
THIS IS A ROCK.
WHAT MOST OF MY CLUNKERS ARE MISSING...

Big Ideas – Head Stuff

Universal Themes = Heart Stuff
COMMON DEVICES

- Circular
  - Natural Cycles
  - Seasons

- Known sequence
  - Through the day
  - Alphabet
  - Numbers

- Opposites

- Known to Unknown
  - Unknown to Known

- Narrative sequence
BEAUTIFUL BOOKS MELD BIG IDEAS & UNIVERSAL THEMES

Swirl by Swirl
by Joyce Sidman
pictures by Beth Krommes

Almost Astronauts: 13 Women Who Dared to Dream
Tanya Lee Stone

Bomb
by Steve Sheinkin

Quest for the Tree Kangaroo
An Expedition to the Cloud Forest of New Guinea
by Sy Montgomery
photography by Nic Bishop
A JOURNEY

From: Alyssa Pusey  
To: sipsby21@hotmail.com  
Cc: Stefanie Von Borstel  
Sent: Friday, October 2, 2015 10:55 AM  
Subject: BUGS DON'T HUG. Editorial thoughts

Hi, Heather,

I was so glad when Stefanie sent me BUGS DON'T HUG. It was good to see another manuscript from you—and a great one at that! I love the concept of parental care in the insect world, and you include so many fun, unexpected, and delightfully weird facts.

I'd like to submit this manuscript for acquisition consideration. Before I do that, though, I'd like us to work together to develop it a little more—so we're putting our best food forward. To that end, let's talk about the following:

- **THEME:** As I said, I really like the unifying theme of parental care among insects. I found the intro to the project irresistible: "Most insects don't take care of their young, but some do. And they do so in surprising ways." I'm not sure that this theme is coming through as clearly in the manuscript itself, though. For example, the two instances of sibling behavior (weevils and stink bugs) dilute/confuse the issue. I've made suggestions in the attached file for clarifying the theme of the book.

- **STRUCTURE:** When Stefanie mentioned the day-to-night structure of the book ("a day in the life of a bug"), I was surprised. That hadn't been clear to me—but I love the idea. I've edited the manuscript to make the structure clearer.
Concept mapping app
“Total Recall”
Words
Don’t give up until you have caught the perfect text.
Writing for Comprehension

Writing with Great Language
WRITING FOR COMPREHENSION
After bowling the home side out for 320, Somerset were left needing 181 from 17 overs to guarantee the title. But, at 48-3, the chase was abandoned at Chester-le-Street and a draw agreed.

Fired-up Notts then took the three Lancashire wickets they required at Old Trafford to pick up a sixth bonus point and break Somerset hearts.

Eventually, Trego had Scott Rushworth caught behind and Benkenstein was caught at slip by skipper Marcus Trescothick off Charles Willoughby to set up the Somerset chase.

They went to the crease not knowing if a draw would be good enough to hold off Notts and immediately lost Kieswetter, promoted up the order, when he was bowled by Somerset old boy Blackwell.
Young California Condor
“Some people were afraid the condor would soon be gone.”

“I would think the people would be afraid when the condor was THERE.”
MORAL OF THE STORY

Be aware of what knowledge you are assuming your audience has. Take the time to explain further if needed.
Symbiosis

- Parasitism: Ticks and Dogs, Tongue-eating sea louse and fish
- Commensalism: Remora and shark, Cattle egret and cow
- Mutualism: Clownfish and anemone, Ants and Acacia
MORAL OF THE SECOND STORY

Move from specific examples to general ideas and from concrete information to abstract theory.
WRITING FOR GREAT LANGUAGE

Explain
- Capture the essence of my point as clearly as possible

Brainstorm
- Come up with words and phrases that would liven the language and fit with my tone.

Voice
- Rewrite the point using some of my brainstorm language
ACTIVITY

For this book, decide on:

• 2-3 adjectives that describe the tone or voice of the text
• 2-3 words or phrases that illustrate why you chose those adjectives
Words.
Structure.
Topic.
Marketplace.
You can do it!
SCIENCE WRITING RESOURCES

• STEM Tuesday Blog: http://www.fromthemixedupfiles.com/category/stem-tuesday/
• Interesting Nonfiction For Kids: http://inkthinktank.org/
• Melissa Stewart's Blog: http://celebratescience.blogspot.com/
• The Open Notebook: https://www.theopennotebook.com/