Before exiting Dori’s ornithology study for good, we will zoom in on the ways she teaches children how to read and write nonfiction during science workshop. I believe one of the reasons learning feels so fluid and connected in her classroom is because she integrates literacy and science so authentically. She doesn’t simply teach kids about nonfiction in isolation. She connects it, actually embeds it within larger units of study. In this case, she deliberately teaches her students how to read and write nonfiction during science workshop, within the ornithology unit itself.

As teachers, we’ve been enculturated to think that we must teach children how to read and write *before* they can begin reading and writing to learn. However, our five- and six-year-olds challenged that status quo perspective years ago and have been showing us what they can do as readers and writers when we create structures and strategies that help them learn to read and write *while* reading and writing to learn.

Since then our kindergarten and first-grade teachers have spent as much time teaching children how to read and write when engaging them as scientists and social scientists as they do during reading and writing workshops. Kindergarten teacher Dori Gilbert provided regular opportunities for her students to read nonfiction books during science workshop as they were viewing the world as ornithologists. As you will see in video clip 1, five- and six-year-olds take to reading and reflecting on nonfiction text features quite naturally. They learn to navigate nonfiction by making connections...
NARRATIVE 1: Teaching Nonfiction Through Ornithology Inquiry, Kindergarten

between the background knowledge they are developing through demonstrations and engagements in class with the pictures, captions, headers, maps, and charts they see in content literacy.

To Create Embedded Inquiry Units, Begin by Investigating the Tools and Data Collection Strategies Used in the Discipline

Dori believed we should teach children how to think and work like ornithologists rather than simply teach them about birds. To do so she embarked on a mini-inquiry herself to learn how ornithologists work.

By Googling “ornithology” and taking about ten or fifteen minutes to read and reflect on the corresponding Wikipedia site, Dori easily saw how to transfer the ways ornithologists work to practices within and just outside her classroom window. Of course there are lots of other strategies you might use to envision how to make learning in school reflect learning in the world. After doing some quick online research, you might talk with professionals in the field or in your local community. You might look at the curriculum resources available in print and online. Once you have a sense of the tools ornithologists use and the strategies they use for data collection, begin planning ways to bring the tools, resources, and practices to life with your children.

After Dori did some general reading about ornithology online, she spent a little more time reading around in field guides and beautiful picture books. Since we can’t give children something we don’t own ourselves, it was important for Dori to develop some expertise in this area herself. She knew she would continue learning in front of and alongside her children. Because she was a passionate learner, she found this phase of planning exhilarating. During this time she envisioned firsthand engagements and the literacy
NARRATIVE 1: Teaching Nonfiction Through Ornithology Inquiry, Kindergarten

materials she would use to embed content literacy instruction into her inquiry into ornithology.

She investigated the **tools** ornithologists use:
- Binoculars
- Notebooks
- Field guides

She identified common **data collection strategies** ornithologists use:
- Bird identification
- Migration patterns
- Bird frequency counts

**Students Benefit from Multiple Demonstrations, Practice, and Background Knowledge on a Discipline’s Tools and Strategies**

Dori Gilbert engaged her students in a range of interesting firsthand experiences with birds in addition to rich, ongoing print experiences through read-alouds, shared, and independent reading of nonfiction bird books.

She provided daily experiences for her students to observe and sketch birds, collect and categorize feathers, graph bird frequency counts, use field guides to identify birds and track migration patterns and learn birdcalls. Dori learned that ornithologists use tools such as binoculars, sketchbooks, cameras, and field guides to identify birds and track migration patterns.

**Primary and Secondary Sources Are Best Used Together to Develop Understanding**

Dori used daily read-alouds and shared reading with nonfiction texts to demonstrate how to read pictures, charts, diagrams, and headers to make connections between their firsthand learning experiences in the classroom and expertise in the field.

Dori taught them how to use compelling nonfiction books to grow their understanding of birds, bird behavior, and predator/prey relationships. She made constant
connections across texts and firsthand experiences. In video clip 2, you will see how Dori scaffolded their learning with her ongoing think alouds. In her room, every moment was a teachable moment. In addition to explicitly showing children how to use nonfiction books to learn, Dori provided independent reading time during science workshop for her students to explore and learn through nonfiction.

**Live Classroom Demonstration:**
Sharing Noticings about Nonfiction Text Features and Content Information about Birds during the Whole-Class Ornithology Circle

Watch video clip 2 featuring Dori orchestrating a reflective sharing session via an ornithology circle. You will notice that the ornithology circle is very much like share time in reading and writing workshop. Since it occurs during science workshop, the children share what they learned about birds as well as how they were learning through nonfiction text features.

**Teaching Moves That Made a Difference:**
How Dori Taught Responsively Throughout the Reflective Conversation

As Dori responded to each child’s insights and ideas, she taught the individual and the class simultaneously. She validated the children’s noticings, whether they focused on photos, charts, maps, or narrative print. At the same time she noticed and named connections between former learning experiences and the ideas generated in the ornithology circle and also provided new content information. She constantly taught into and out of the children’s current understandings.
NARRATIVE 1: Teaching Nonfiction Through Ornithology Inquiry, Kindergarten

Young Children Learn How to Read Nonfiction in the Company of Others, Tall and Small

Dori built independent and shared reading time into science workshop. She allowed her five- and six-year-olds to read independently or together when reading to learn. Some kids were reading alone but many were sharing and talking about texts. Most were making connections between what they had been exploring together in class and what they encountered in the illustrations or texts. One child was talking to himself, posing questions, and making predictions. He wondered aloud as he shared his book with me, “I have no idea what he’s doing. Maybe he’s going to get eaten by the bird. Maybe she (the bird) is actually helping the ants.” Clearly, this young ornithologist found his book engaging! At the same time, two other boys were sharing a book about penguins, making explicit connections between the photos of fledglings, content they learned in class, as well as the movie, March of the Penguins.

Children Learn Best Through Repeated Exposure to Concepts and Vocabulary

Dori believes it is important to weave information from units of study into the fabric of the curriculum, all day, every day. When her students crossed the classroom threshold each morning, they lived and learned as ornithologists throughout the day. Dori used a nonfiction book with pictures of birds and corresponding birdcalls to teach them a different birdcall each day and used the book to make classroom transitions throughout the day. For example, one day they learned the chickadee call and their teacher led them in practicing it as she gathered them together to form an ornithologist circle for whole-class sharing.
NARRATIVE 1: Teaching Nonfiction Through Ornithology Inquiry, Kindergarten

Children Need to Develop the Identities and Sense of Agency Adults in the Discipline Have

Dori referred to and spoke to her young learners as ornithologists. They were not pretending to be bird scientists, they were studying birds just as ornithologists do. As the budding ornithologists began sharing what they noticed in their bird books they revealed sophisticated content knowledge while demonstrating how to strategically access text features to learn.

Children Can Learn Content and Strategies for Navigating Nonfiction from Each Other

Dori invited each child to share something interesting or exciting in their books during the whole-class reflection. They each added to their classmates’ understanding about birds and literacy. This simple but effective strategy promoted authentic accountability. When students were exploring their books, they knew they would be expected to make interesting contributions that would engage and lift the learning of their young colleagues. It was truly open-ended, meaning there were no entry or exit prerequisites to be successful. The child who shared a photograph of a scary owl was validated just as much as the child who used a map to show that the Carolina wren lives in Texas and South Carolina and eats berries. They take their learning seriously when they know they will be expected to use it to teach others.

Just think about the depth and breadth of the ornithology content and text features that the children and their teacher explored during this single reflection session. Since it occurred immediately following independent reading in science workshop, they knew to focus on both content and the form of the text. In other words, they shared exciting new
information they were learning about birds as well as the text features that helped them
develop these new understandings. This list reveals the gist of content the children shared
during their ornithology circle.

**Ornithology Content:**

- Hummingbirds have to keep flying because they have weak feet.
- When looking at a picture of a bird’s heart they were reminded that’s how it gets oxygen.
- Chickens lay eggs.
- Different birds live in different regions of the country.
- Some birds are diurnal while others are nocturnal.
- Some birds eat nectar, others eat insects and/or seeds. They are called carnivores, omnivores, or herbivores, depending on what they eat.
- Often names of birds reflect their physical characteristics, like the spotted woodpecker because it has spots.
- The Carolina wren is our state bird.

**Text Features:**

- Maps show where birds live.
- Photographs show what birds look like.
- Illustrations are used to show details like feathers close up.
- Print conveys or explains interesting information about bird behavior, habitats, migration patterns, physical traits and their functions, and so on.

When visiting Dori’s kindergarten during science workshop, you were just as likely
to encounter twenty-two students intently reading photographs, models, headers, and illustrations as you would find them sketching a live bird in a cage or using magnifying glasses to explore how nests are constructed. You see, high-quality nonfiction books were among Dori’s most important teaching tools.

Dori found tremendous power in teaching children science content and strategies for navigating nonfictions texts in concert. This broad belief that embedded inquiries offered authentic opportunities to teach children how to learn while teaching them what to learn provided fertile ground for the following beliefs and practices to emerge.
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