Jump-Start Inquiry: How Students Begin When They Don't Know

by Kristin Fontichiaro and Julie Green

How Can We Better Scaffold the Development of Inquiry Questions?

In *Powerful Learning: What We Know about Teaching for Understanding*, Darling-Hammond references three keys to conceptual understanding: consideration of prior knowledge, organization of information so that it is useful and transferable, and awareness and management of one's learning style (2008).

In today's increasingly diverse schools, how can educators level the playing field for students with varied background knowledge before these students begin doing research? How can prior knowledge be awakened to give students a foundation upon which meaningful questions can be constructed? How can students be helped to know the words, terms, and key concepts necessary to experience true inquiry—to question, navigate digital or print materials, sift and sort information, and synthesize what has been learned?

One method is to build prior knowledge with a picture book. (Secondary teachers and school librarians might select a letter, poem, or provocative paragraph.) Introducing and discussing a common text can help elicit students' background knowledge and awaken relevant, deeper questions for research inquiry. When this work is paired with a multimedia wiki pathfinder, students have a well-scaffolded, motivated learning experience.

Choosing a Text

A rich text—fiction or nonfiction—sets the stage for a meaningful experience. Well-chosen texts awaken authentic questions related to the research topic. For example, when a district's second grade science curriculum focuses on reversible and irreversible changes, Eric Carle's *The Tiny Seed* is a good choice for a core text because it gives an overview of the seed cycle. Students will naturally be led to develop questions related to those scientific topics (see "Using Picture Books to Jump-Start Inquiry in Elementary Learners: *The Tiny Seed*," pages 6-7). However, a book about climbing trees is only tangentially related to seed growth and is unlikely to nudge young learners to generate questions about seeds. Similarly, books with anthropomorphized animals do little to awaken questions about wildlife.

Laying the Groundwork

An effective strategy to begin inquiry is one developed by Debbie Miller, which involves creating a large model of a manila folder by taping two pieces of poster board together and dividing the "folder" into four labeled quadrants (2008). The top two quadrants are "What We Think We Know" and "Questions" and the bottom two quadrants are "What We Learned" and "Misconceptions." The vocabulary from the chart and the topic of the book are introduced to students. Teachers take dictation from the students, write each assumption on a separate pink sticky note using a dark marker for maximum readability, and

place them in the "Think We Know" quadrant. (Another option is to have students scribe their own assumptions.)

Reading the Text

Next, the text (or a portion of it) is read aloud, pausing to "think aloud" about questions that arise from the reading and noting them on pink sticky notes in the "Questions" section. (In a co-teaching situation, one educator could read the text while the other creates questions.)

After Reading

After gathering additional questions from students for the "Questions" section, the instructors can "think aloud" about what has been learned, scribing new information on yellow stickies. The 3" x 3" stickies provide an opportunity to model brevity in note taking! (An alternative is to use a fictional text to elicit questions and follow up with a nonfiction text to find answers.)

Modeling Synthesis

If a "Learned" fact supports a "Think We Know" item or answers a question, then the two stickies are attached to one another and both are placed in the "Learned" quadrant.

But what if the new knowledge contradicts students' prior conceptions? Such a moment is difficult for young learners, many of whom struggle when new learnings are inconsistent with their prior knowledge. Miller's method scaffolds the correction of misconceptions by visually demonstrating how

new information replaces the old. As an example, when the instructors discover a yellow "Learned" sticky that contradicts something on a "Think We Know" sticky, they stick them together and move them to "Misconceptions." They explicitly discuss how the new information corrects their previous assumptions and point out how research can help clarify and replace incorrect information.

Research: Going 2.0

At the start of Day Two, students are ready to team up and begin the quest to find answers (and more questions). Students use the computers for research and record what they learn on yellow stickies. The amount and sophistication of information resources, however, can be very overwhelming for young students. Wikispaces wiki can be used to create an efficient multimedia pathfinder for students.

To populate the wiki, the instructors can begin by creating a Voki.com avatar that is embedded into the wiki and can "speak" the instructions aloud to students. The audio instructions support nonvisual or easily distracted learners because, unlike oral directions, the Voki's instructions are always available for repeat listening which helps students become more independent in their explorations.

The school librarian can also add links to database search results. By linking to the results and not to the database search page, students jump straight into great resources. This approach eliminates poor searches due to misspelling and focuses learners on comprehension and information-gathering. To support beginning readers, the selected databases are chosen for their reading levels and availability of articles in audio format.

In addition, the school librarian can embed multimedia Web resources like photographs and YouTube onto the wiki page, which let students view them without leaving the wiki's home base. Informational text is added, at the students' reading levels, from *Google*

Books (http://books.google.com). This provides access to the same books by multiple students, a boon for libraries with limited funds. Students can click through the pages or click on the links in the table of contents to go directly to a specific section. Though many Google Books omit a few pages, their flexibility is invaluable. Another added feature is the search tool within each book. Students can type in a word and it will be highlighted throughout the book, guiding novice readers to relevant text. Students can explore the resources in the order of their choice, discussing their learnings and checking for understanding with their partner before writing them on stickies. Educators can circle the room for informal mini-conferences throughout the process, gaining valuable formative feedback.

Reporting Back to the Class

After researching, students can report their learnings back to the class by repeating the Synthesis task. If a question is answered, or "What we think" validated, the two stickies are paired and placed in "New Learnings." If research reveals a misconception, both stickies move to "Misconceptions."

Metacognition

To provoke reflection, the school librarian can create a Google Form, part of the free Google Docs productivity suite (http://docs.google.com). The user can design forms with multiple choice, short answer, essay, checklist, and/or true/false reflection questions. When students are ready, they can type or submit their answers into the Form, which is embedded on a second wiki page. The students' results are automatically added to a spreadsheet in the Google Docs

account, complete with a timestamp. The instructors can quickly glance at the results and assess whether students are on track or need more guidance.

Conclusion

Because the focus for this assignment was on developing questions, seeking answers, and sharing what was learned, a cumulative project was not required. Instead, instructors chose to strengthen students' skills by repeating the activity again with a new topic and text.

By focusing attention on background knowledge, students were helped to generate resonant, curriculum-related questions. The wiki pathfinder safely connected young learners to differentiated, multimodal texts. The result? Deeply satisfying learning for a variety of students.

References:

Buczynski, Sandy, and Kristin Fontichiaro. *Story Starters and Science Notebooking: Developing Student Thinking through Literacy and Inquiry*. Teacher Ideas Press, 2009.

Carle, Eric. *The Tiny Seed*. Crowell, 1970.

Darling-Hammond, Linda. *Powerful Learning: What We Know about Teaching for Understanding*. Jossey-Bass, 2008.

Miller, Debbie. *Teaching with Intention: Defining Beliefs, Aligning Practice, Taking Action, K-5*. Stenhouse, 2008.◄

Kristin Fontichiaro and Julie Green are elementary school librarians for the Birmingham (Michigan) Public Schools. Both have written books for intermediate-grade readers about the research process: Julie created *Super Smart Information Strategies: Write It Down!*, and Kristin authored *Super Smart Information Strategies: Go Straight to the Source!* (both Cherry Lake Publishing, 2009). An adjunct lecturer for the University of Michigan, Kristin's most recent book for Libraries Unlimited is *21st-Century Learning in School Libraries* (2009). Email: font@umich.edu and jg13bps@ birmingham.k12. mi.us

When students begin to speak with some amount of fluency and have mastered some really tough grammar topics, they are definitely ready to learn the art form of small talk. Providing small talk amongst students at the beginning and end of every class can be a very organic way to get them speaking naturally. Step back from goal-setting with students for these warmers or wrap-ups and simply begin some small talk casually and conversationally. Students should learn how to politely answer unexpected questions, ask for clarification if they don't really understand, and employ strategies to continue a conversation that begins this way. Let your students take the lead on small talk, and make it a usual occurrence in the classroom. 2. D. When your dog won't roll over or your cat is making a mess, you might have to call someone who specialises in pet behaviour to solve your problems. This person analyses the pet's confidence and security inside and outside the home to find the source of the problem. By studying their instincts and social rituals in their natural habitat as well as around humans, they modify the unwanted behaviour. It is all about helping dogs, cats and horses feel safe and confident and secure inside and outside our homes. E. Being a queen's piper involves playing the bagpipes for 15 minutes at 9 am under th