Welcome to Year Two of “Nudging toward Inquiry.” Last year, librarians and educators volunteered their small tweaks to shift existing research projects closer to inquiry. As Jean Donham points out in her article in this issue of SLM (pages 8-11), these projects were topic-focused: country, animal, and science reports, to name a few. This year, we move further toward inquiry-based learning. Instead of adapting existing practices, we’ll build inquiry understanding from the ground up.

Authentic inquiry focuses on student questions and curiosity and the engaging quest for authentically resonant synthesis or solutions. Inquiry is not an adult-free, laissez-faire free-for-all. Adult scaffolding and modeling of the inquiry’s recursive process helps guide students in effective paths to understanding (Kuhlthau, Collier, and Maniotes 2007).

In each issue, we’ll pool readers’ knowledge of new and familiar strategies that will support inquiry-based pedagogy. In this issue, we’ll look at prior knowledge strategies; in upcoming issues, we’ll examine questioning; information search, extraction, and notetaking; synthesis; formative and summative assessment; and reflection. Inquiry is rarely as linear as this list implies; rather, inquirers may revisit any stage at any point. For example, new questions may arise during notetaking, or struggles to synthesize might reveal a need to find more information.

About Prior Knowledge

“Prior knowledge” (sometimes called schema or background knowledge) is information we already know that helps us make sense of new information. Imagine that your doctor recommends a magnetic resonance imaging exam (MRI). You may not know what an MRI is or does, but you already know about magnets. Your understanding of how MRIs work will build on that existing knowledge of magnets.

New learning builds on existing prior knowledge. In traditional reporting-style research projects, students bypass this crucial step and plow right into answer-finding. It’s no wonder that many adults—including many librarians—harbor memories of “boring research.” Research is boring when it is disconnected from students’ lives, yet utterly fascinating when it connects to what they know.

In some schools, it will be effective to awaken existing prior knowledge by reminding students of what they already know. KWL charts, created by Ogle (1986), are the best-known method of awakening existing knowledge (see http://www.ncrel.org/sdrs/areas/issues/students/lr2kwl.htm). Often, it cannot be assumed that prior knowledge exists. Building prior knowledge—creating intentional learning activities that can give that strong foundation and level the playing field for all learners—then becomes imperative. Building prior knowledge can also help identify flawed assumptions or misconceptions. A text or multimedia excerpt, picture book, artifact or physical object, or inventory walk of materials (Klentschy 2007) all provide basic

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<th>Sample KWL Chart</th>
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<td><strong>K</strong></td>
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<td>What I KNOW</td>
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information that can help learners create mental roots.

We asked librarians, educators, and readers on the SLM blog (http://blog.schoollibrarymonthly.com) for their strategies for developing and assessing prior knowledge in their students.

Wikipedia as a Foundation for Learning

Students choose a broad topic to research. Without consulting any resources, they jot down or map their current knowledge about the topic or subtopics. After a fairly robust brainstorm, they move to the second step, where I see value in using Wikipedia. They locate and print a Wikipedia article about the broad topic area. They use one color to highlight what they already know on the topic and another to mark new information. This can lead to questioning. I reemphasize the value of Wikipedia and most general encyclopedias as useful early-stage research tools—not final sources.

I often ask students to write a reflective paragraph in their research journal. I read these and offer feedback. We also have discussions (one-on-one, small group, or whole class) about what they know, which can help students realize that they know more than they thought they did.

—Sandra Jenkins, University of Central Missouri, Warrensburg, MO

Video-Based Learning

Showing a short video clip helps students to gain visuals and topical information. After the video, I play a PowerPoint game that asks students to name the key objects/concepts that they may already know or at least have seen from the video.

I don’t feel that it is fair to assess my students’ prior knowledge if we haven’t done any learning together, because everyone comes from different backgrounds and experiences. However, students might write a reflective journal or short writing piece about what they already know. This can help me to guide and support the kind of inquiry each student could pursue to learn something new.

—Seryl S. Lee, Chongqing Maple Leaf International School, British Columbian offshore school in China

Mysterious Artifacts

I love a mystery and so do my students. Creating a buzz around a mysterious artifact can not only provide student engagement but also much-needed prior knowledge. During our planning session, the classroom teacher and I decide what item would elicit the best results to demonstrate what our students already know. After unveiling the “object,” students share what they “know” about it. This can be done as whole-group brainstorming or as individual writing, depending on the students’ age and the time available. It is a fun, engaging way to quickly assess how much background knowledge you need to provide to ensure authentic student learning. This year, we will have a response system of clickers. I am anxious to use these as another quick pre-assessment tool.

—Liz Deskins, J.W. Reason Elementary, Hilliard, OH

Time for Exploration

Wandering and wondering. Allowing students the time to browse through books, primary documents, magazines, and more gives them the opportunity to ponder and create questions about our topic that will go on our KWHL chart. Once students have been given ample time to browse (more difficult than it sounds, as we are all in such a hurry), we gather to find out what we know, or think that we do. This can come in the means of a KWHL chart (see http://www.graphic.org/kwhl.html), an “I wonder” list of questions, or a questioning web.

Using carefully crafted questioning during your group time, you can easily assess your entry level into the new unit, what amount of foundational information you must give to the entire class, or just a small group, such as ELL, to bring everyone to that equal foundation. My teachers and students love using the Smart Board for “I wonder questions,” and I can easily save the questions for us to refer to as we mount our research. One more benefit from student sharing of prior knowledge is that it leads us to know what further resources are necessary to ensure student success.

—Liz Deskins, J.W. Reason Elementary, Hilliard, OH

Customizing Options to Fit the Need

For K-3 students, I’ll use interactive Web sites, images, maps and video on the Smart Board, audio recordings, or physical artifacts to trigger connections to past curriculum. If the knowledge is social-emotional, we may have pair and group discussions about our experiences. Historical fiction read-alouds are an excellent support to building background knowledge in social studies. Using graphic organizers will help students organize their knowledge and can help highlight student misconceptions. One adjustment to KWHL I like (forget where I first saw it!) is changing the “K” to “T”, (“what I think I know”).

For assessment, I ask lots of questions and listen to group discussions. I am interested in trying some new strategies I learned this summer: a group mind map or “graffiti brainstorm” (poster paper passed around the room as students write what they know about a topic).

—Amalia Connolly, Yorktown Central School District, Yorktown, NY

Share Your Knowledge


References:


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The basics of this lesson can be used with students at different levels, helping them to identify what they already know and to build interest in and curiosity for the inquiry work to come. It also guides them to develop questions about things they are curious about and want to know before they begin the research process.

Information Literacy/Inquiry Objectives:
Connecting to AASL’s Standards for the 21st-Century Learner, 2007
- Use prior and background knowledge as context for new learning (1.1.2).
- Participate and collaborate as members of a social and intellectual network of learners (3.1.2).
- Show social responsibility by participating actively with others in learning situations and by contributing questions and ideas during group discussions (3.2.2).
- Connect ideas to own interests and previous knowledge and experience (4.1.5).

Curriculum (subject area) Objectives:
Any

Grade Levels: Adaptable for K-12

Resources:
Items from nature
Physical objects
Primary source documents, maps, or images from:
Calisphere. http://www.calisphere.universityofcalifornia.edu/
Other online or print source
For a photo of a mastodon tooth, see http://www.lakeneosho.org/More20.html
For the “Lincoln’s Pockets” exercise, download the images from http://memory.loc.gov/ammem/collections/stern-lincoln/objects.html

Instructional Roles:
The teacher and school librarian meet to discuss an upcoming unit of study or research. They identify key ideas, themes, and questions that might arise in the unit. They then identify a primary source (an object, document, map, or image) that will be used to introduce the unit using the See, Think, Wonder method (Fontichiaro 2010). The focus of the activity is to elicit what students already know through a series of three scaffolded questions of increasing difficulty. When the activity is presented, one educator acts as the discussion facilitator and the other as scribe.
Students are about to begin their study of the Civil War. The teacher and school librarian are concerned that study in past years (a combination of classroom work and research) has focused too much on “superficial facts” (AASL 2007) and that the students do not seem connected to the people of the Civil War.

In advance of the lesson, the instructors print out 8” x 10” color photos of each of the nine items that were in Lincoln’s pockets when he was assassinated. What can they learn about Lincoln as a person from this inventory of items? How did those details make the forthcoming inquiry work more resonant, there is no formal assessment. Instead, the teachers observe the conversation and use the questions and comments to guide their future lesson design. Students are encouraged to use their curiosity-driven questions as a foundation for beginning the inquiry process.

Professional Reflection:
While we have traditionally used primary sources as research tools, we have found the use of images, tactile objects, and documents to build excitement and enthusiasm for the work to come. The facilitator again thanks the students and identifies the object as a mastodon tooth before asking, “What do you wonder? What questions do you have about this object?” Students again “turn and talk” (Harvey and Daniels 2009) and then share their ideas with the class, where they are scribed.

From this point, the class inquiry about mammoths can build. The educators refer and add to the chart as the class discovers information that answers the students’ questions.

Sample Secondary Lesson: Focus on Socially-Constructed Prior Knowledge

Students are about to begin their study of the Civil War. The teacher and school librarian are concerned that study in past years (a combination of classroom work and research) has focused too much on “superficial facts” (AASL 2007) and that the students do not seem connected to the people of the Civil War.

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