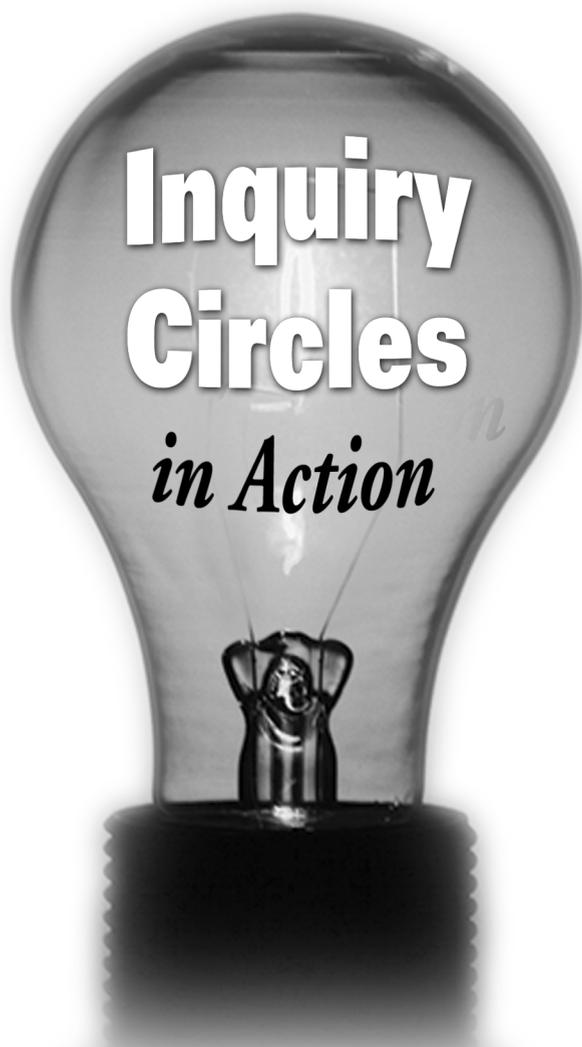


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## What We Know About Inquiry



This book is about empowering students to find out: to get answers to important questions about school subject matter, and to questions kids have posed for themselves. Simple enough?

But we have a terminology problem. What do we call this finding-out process? We recognize that this work includes *research*; we know that kids are conducting *investigations*; and certainly, students create and go public with various *projects* along the way. The word *inquiry*

embraces all these activities, but means something even more.

Let's start with some every day definitions of inquiry, to get an idea of its unique connotations. And everyday now means Wikipedia, right?

*Inquiry* is any process that has the aim of augmenting knowledge, resolving doubt, or solving a problem.

—WIKIPEDIA

Now that's pretty straightforward. It reiterates the idea that inquiry is about finding out, and adds connotations of urgency, of resolving some disequilibrium.

What happens when we bring this inquiry process to school? Let's see what else Wikipedia has to say:

*Inquiry-based learning* describes a range of philosophical, curricular, and pedagogical approaches to teaching. Its core premises include the requirement that learning should be based around student's questions. Pedagogy and curriculum requires students to work together to solve problems rather than receiving direct instructions on what to do from the teacher. The teacher's job in an inquiry learning environment is therefore not to provide knowledge, but instead to help students along the process of discovering knowledge themselves. In this form of instruction, it is proposed that teachers should be viewed as facilitators of learning rather than vessels of knowledge.

Now we are growing a definition. Inquiry-based teaching is problem or question driven; it encourages collaboration; it makes kids into explorers and discoverers; it requires kids to think; and it puts teachers in nonconventional roles.

We created a chart that expands the definition of inquiry and contrasts it with more didactic, information-transmission methods of teaching. Here we pull together ideas from many scholars, but we express special gratitude to Jerome Harste, who has worked for decades to explicate and promote the principles of inquiry-based teaching and learning.



## **Inquiry Approach** *versus* **Coverage Approach**

### **INQUIRY** Approach

- Student voice and choice
- Questions and concepts
- Collaborative work
- Strategic thinking
- Authentic investigations
- Student responsibility
- Student as knowledge creator
- Interaction and talk
- Teacher as model and coach
- Cross-disciplinary studies
- Multiple resources
- Multimodal learning
- Engaging in a discipline
- Real purpose and audience
- Caring and taking action
- Performance and self-assessments

### **COVERAGE** Approach

- Teacher selection and direction
- Required topics and isolated facts
- Solitary work
- Memorization
- As if/surrogate learning
- Student compliance
- Student as information receiver
- Quiet and listening
- Teacher as expert and presenter
- One subject at a time
- Reliance on a textbook
- Verbal sources only
- Hearing about a discipline
- Extrinsic motivators
- Forgetting and moving to next unit
- Filling in bubbles and blanks

There are many ideas here, but we see three key strands. One involves *framing school study around questions developed and shaped by kids*, as much as possible. This doesn't mean our students spend 180 days researching "Why is my skateboard so awesome?" Instead, we draw upon kids' background knowledge and curiosity to evoke deep and real questions about the subject matter we have to teach as well as about the concerns young people bring to school.

Instead of reciting the textbook information about Abraham Lincoln, we patiently invite kids to pose questions while we listen and list: "Did Lincoln really have some weird disease? Was his wife insane? What did he really think of black people? Was he ever a soldier himself? I want to know more about when he was assassi-

The ultimate manifestation of thinking, to us, is not passing a quiz, but being somehow changed and *doing something* as a result.

nated. Did those guys ever get caught?” And then we build our teaching around kids’ genuine curiosity, connecting official curricular topics to their search for answers.

Now, this isn’t just catering to students. A recent study by Ivey and Broaddus (2008) showed that kids remember the curriculum much better when their teachers figure out what aspects of it are interesting to them, and *begin there*. And if kids don’t have the necessary background knowledge to pose their own questions, we “problematize” the curriculum by posing puzzles that pique kids’ interest: “What happens to the world when you buy an iPod? How can we help save tigers from going extinct? Did you know that many of the people who produce sugar today are slaves? What would it take to build a colony on Mars?”

The second big theme of the chart is *handing the brainwork of learning back to the kids*. We’ve joked about schools being places where young people go to watch old people work. Well, now we are taking kids off welfare. No longer will we coddle them by delivering all the information, explaining exactly how they should structure their thinking, or how they should show what they know. Everybody says kids need a challenging curriculum. Well, here it is. In true inquiry, kids have to take responsibility for things that real learners do. They have to identify worthy problems and questions. They have to use the proper disciplinary tools (microscopes, timelines) and procedures (surveys, formulas), just like real practitioners. They have to work with others, build knowledge, and ultimately, submit their findings to a peer or public audience.

The third strand in our definition of inquiry won’t surprise you: *we focus on the development of kids’ thinking, first, foremost, and always*. After three chapters of talking about thinking, we don’t need to repeat ourselves here. Suffice it to say that in true inquiry-based learning, we move kids quickly along the “continuum of comprehension” from recall and retelling to the higher-level activities of building and using knowledge. And the ultimate manifestation of thinking, to us, is not passing a quiz, but being somehow changed and *doing something* as a result.

## The Trend Toward Inquiry

Today, inquiry-based learning is enjoying a bright resurgence, after a few years in the wilderness. In Chapter 1, we explained how the original No Child Left Behind legislation pushed kids back into straight and quiet rows, prized factual recall over deep understanding, and compelled teachers to devote countless classroom hours to test-prep for high-stakes multiple-choice tests. As this testing frenzy wanes somewhat, inquiry is rapidly returning to the center of the national education agenda.

Linda Darling-Hammond, the eminent researcher who served on President Obama’s education transition team, has recently published a book on inquiry called *Powerful Learning: What We Know About Teaching for Understanding* (2008). Featuring articles by some of our most prominent education researchers, the book recommends inquiry as the new American pedagogy. Darling-Hammond and her

colleagues call for the “implementation of inquiry-based curriculum that engages children in extended, constructive work, often in collaborative groups, and subsequently demands a good deal of self-regulated inquiry” (p. 13). They argue that in the global economy, for American young people to have satisfying lives—and for our country to remain competitive—“education must help students learn how to learn in powerful ways so they can manage the demands of changing information, technologies, jobs and social conditions” (p. 12). The best framework for this kind of adaptive thinking, the authors continue, is complex, meaningful projects that “require sustained engagement, collaboration, research, management of resources, and the development of an ambitious performance or product” (p. 12).

The Darling-Hammond book is part of an avalanche of new publications promoting inquiry learning. In a *Phi Delta Kappan* article called “School as Inquiry,” Chicago researcher Steven Wolk argues: “Telling our students to sit quietly and listen will not turn them into lifelong learners or engaged citizens . . . inquiry-based teaching can transform our classrooms and spark a love of learning” (2008, p. 115). Wolk goes on to explain that “curriculum is not just the facts and skills we teach, but the knowledge we create together and the understandings and connections that each learner makes from that knowledge. Teaching through inquiry considers our work a failure if students do not leave school filled with questions and the yearning to explore them” (p. 12). He shares stories of schools around the country, including Burley School in Chicago (the subject of this book’s companion video), that are moving decisively away from rote learning and toward inquiry circles and related structures.



This move toward inquiry is by no means restricted to elementary teachers and leaders. Jeff Wilhelm, whose work on adolescent literacy is widely influential, has brought new attention with *Engaging Readers and Writers with Inquiry* (2007). Jeff offers one of the shortest definitions of inquiry we’ve ever seen: “Living the questions.” We love that. And he quotes one of our favorite writers, the eminent biologist E. O. Wilson:

Most people teach biology by starting with the molecule. This is exactly the wrong way to go . . . It is not how we learn. It is not how the disciplines create knowledge. You need to start with the big issues and questions and problems that drive the discipline. Go top-down and tell the students that you are going to consider the interesting problems that organize the subject. (p. 15)

When we hear a great thinker like E. O. Wilson explaining his own learning, we surely agree with Jeff Wilhelm that “to truly prepare students to be substantive thinkers and democratic citizens, we need to move from the tyranny of information-transmission teaching that dominates American education to inquiry-based teaching” (p. 20).

Now, inquiry may seem like an innovation in some school subjects, but it’s long been the standard for state-of-the-art instruction in science. For decades

Dewey argued that the public schools should be working, authentic communities and he emphasized the social aspects of learning.

there has been a strong consensus, not just among standards writers and school districts, but among major national organizations like the American Association for the Advancement of Science, the National Science Teachers Association, and the National Research Council, that students should engage in the work of science and not just hear some adult talk about it. As the NRC puts it:

Students at all grade levels and in every domain of science should have the opportunity to use scientific inquiry and develop the ability to think and act in ways associated with inquiry, including asking questions, planning and conducting investigations, using appropriate tools and technologies to gather data, thinking critically and logically about the relationships between evidence and explanation, constructing and analyzing alternative explanations, and communicating scientific arguments. (1996, p. 20)

Following these principles (which, to us, are totally applicable to all subject areas) science teachers can design experiments that puzzle and provoke, that evoke kids' questions, reveal amazing phenomena, and challenge students to construct scientific knowledge by combining new information with their prior understandings. International comparisons of math and science achievement show that kids taught through inquiry do significantly better on standardized tests than those experiencing the conventional topic coverage model (Weglinsky 2004; McTighe, Seif, and Wiggins 2004; Wilhelm 2007).

## **The Heritage of Inquiry Learning**

Teaching with extended, experiential, and collaborative investigations is not just something we've cooked up in the twenty-first century. Such teaching is actually a long-standing *movement* in education. It traces back to the 1590s, in the academies of Paris and Rome, as students were given authentic problems to solve—such as designing a building or monument. The application of this method to architecture and design became a standard approach and spread through Europe. In 1865, project teaching was introduced to engineering students at the Massachusetts Institute of Technology.

Soon, John Dewey paved the way for inquiry projects with elementary and secondary students. Dewey argued that the public schools should be working, authentic communities and he emphasized the social aspects of learning. He described school as a place where students should practice living democratically and work together to identify and solve problems. Dewey believed that students would learn more about themselves, the world, and about valuable subject matter by working collaboratively with others (1938/1963). Later, at the University of Chicago Laboratory School, he brought to life a place where students often teamed up to develop and carry out inquiries together.

In 1918, Dewey's protégé, James Kilpatrick, published a highly influential essay called "The Project Method: Child-Centeredness in Progressive Education." The



**I**nquiry projects turn out to be an enduring idea in American education.

article was a sensation because it offered a practical methodology to match Dewey's theories of teaching and learning. Kilpatrick became the leader of a large corps of educators who believed that the most powerful educational structure was "whole-hearted purposeful activity," as when kids engaged in extensive, extended, and life-like inquiries, which he called projects. Even in his own college classes at Columbia University, where he was the most popular professor of the day, Kilpatrick taught congruently with progressive principles—using small-group work, discussion, and summary lectures in classes that typically exceeded six hundred students. As you might surmise, Kilpatrick clashed with the conservative, skills-and-accountability proponents of the time, including the ever-fuming William Randolph Hearst.

Over the next several decades, the idea of extended, lifelike, student-driven, and experiential projects was incorporated into every succeeding iteration of progressive pedagogy: open classroom, whole language, literature-based instruction, integrated curriculum, the middle school movement, reading and writing workshop, and more. So inquiry projects turn out to be an enduring idea in American education. James Kilpatrick would probably be happy to hear that this movement is still alive ninety years after his seminal essay on the project method.

## **I**nvestigating in Groups

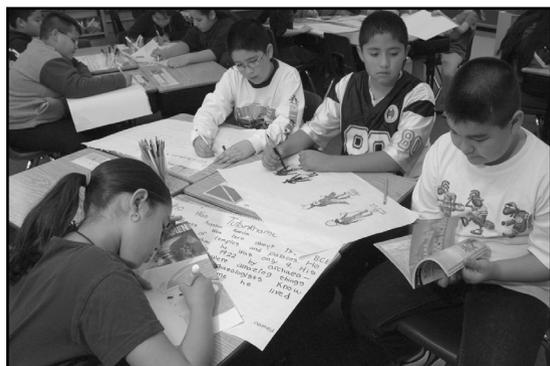
Many of the inquiry models going back through the years have featured students pursuing individual questions, and working mostly alone. Nothing wrong with that, of course. Steph shared a model for individual inquiry projects in her book *Nonfiction Matters* (1998) that still resonates today. But when we add teaming to the mix, we reach new levels of energy, authenticity, and depth. Kathy Short, Jerry Harste, and Carolyn Burke made a special contribution when they cogently argued for col-

laborative inquiry groups in their groundbreaking book, *Creating Classrooms for Authors and Inquirers* (1995).

"Because we believe it is through collaboration that students gain new perceptions and outgrow their current selves," they wrote, "we wanted students to form groups where they are pushed to consider new ideas and to explain their thinking to others" (p. 271). The authors describe active, heterogeneous, student-driven groups that worked together, under general class themes, to construct knowledge around their own inquiry questions, and who ultimately shared their

thinking in presentations for classmates, using a wide variety of written, oral, dramatic, and artistic forms—and sometimes, taking action in the world.

As you might expect, we are in accord with Short, Harste, and Burke's robust and rigorous definition of what authentic inquiry looks like for small groups of kids. For us, the term *inquiry circles* fits this kind of small-group activity well—though many teachers we work with around the country, including some who have contributed to



*In inquiry circles kids are pushed to consider new ideas and explain their thinking to others.*

this book, use other labels, like learning circles, question circles, or group investigations. Well, as long as real, student-driven inquiry is at the core, what's in a name?

## The Steps and Stages of Inquiry

So what does inquiry learning look like, not just in theory but in real time, with real students? The world is rife with graphic models of student inquiry, and diagrams portraying the “research process” abound on the Internet. Of course, any paper model is going to be simplistic and potentially misleading, since inquiry is such a complex and varied experience. Still, we can outline some general directions and phases. Our own model of this process draws can be schematically represented like this:

Small-Group Inquiry Model		
STAGE	TEACHER	KIDS
<b>Immerse</b> <i>Invite Curiosity, Build Background, Find Topics, and Wonder</i>	<ul style="list-style-type: none"> <li>• Invites curiosity, questioning, engagement</li> <li>• Shares own curiosity</li> <li>• Models personal inquiry</li> <li>• Shows how to ask questions</li> <li>• Demonstrates topic finding</li> <li>• Gathers and organizes relevant materials and resources</li> <li>• Immerses kids in topics to build background</li> <li>• Facilitates small-group formation to ensure heterogeneous groups with compatible interests</li> <li>• Confers with small groups and individual</li> </ul>	<ul style="list-style-type: none"> <li>• Express their own curiosity</li> <li>• Explore, experience, and learn about topics using texts, visuals, Internet, artifacts, etc.</li> <li>• Think about what they know and connect new information to background knowledge and experience</li> <li>• Wonder and ask questions</li> <li>• Read, listen, and view to build background</li> <li>• Respond with questions, connections, and reactions</li> <li>• Meet with teams to set schedules, ground rules, and goals</li> </ul>
<b>Investigate</b> <i>Develop Questions, Search for Information, and Discover Answers</i>	<ul style="list-style-type: none"> <li>• Floods kids with resources and materials on a topic or question</li> <li>• Models how to read, listen, and view with a question in mind</li> <li>• Models how to take notes by interacting with text, coding text, and writing in margins or on Post-its</li> <li>• Demonstrates how to determine importance</li> <li>• Helps kids sharpen or change inquiry focus</li> <li>• Facilitates changes in group membership or topics</li> <li>• Confers with groups and individuals</li> <li>• Shows how to infer answers and draw conclusions</li> <li>• Demonstrates how to read for the gist and synthesize information</li> <li>• Connects kids' questions to the curricular concepts and focus questions</li> </ul>	<ul style="list-style-type: none"> <li>• Articulate thoughts and questions that stem from their own interests and experience</li> <li>• Listen, talk, view, and read to gain information</li> <li>• Write, talk, and draw to think about information</li> <li>• Develop questions; then read, listen, and view to answer them</li> <li>• Use text and visual features to gain information</li> <li>• Meet with teams to set and monitor schedules and task completion</li> </ul>

**Small-Group Inquiry Model, cont.**

STAGE	TEACHER	KIDS
<b>Coalesce</b> <i>Intensify Research, Synthesize Information, and Build Knowledge</i>	<ul style="list-style-type: none"><li>• Shows how to infer answers and draw conclusions</li><li>• Demonstrates how to read for the gist and synthesize information</li><li>• Engages kids in guided discussions and debates</li><li>• Shares how to evaluate sources</li><li>• Teaches interviewing strategies</li><li>• Facilitates arrangements for out-of-school resources</li><li>• Confers with groups and individuals</li></ul>	<ul style="list-style-type: none"><li>• Engage in deeper reading and research using books, articles, websites, videos, library visits</li><li>• Target key ideas and information</li><li>• Keep asking: So what? What about this really matters?</li><li>• Practice interviewing</li><li>• Conduct “people” research: interviews, surveys, questionnaires, focus groups</li><li>• Check sources and determine reliability</li><li>• Synthesize information to build knowledge</li><li>• Meet with teams to monitor schedules, complete specific tasks, and plan for sharing</li></ul>
<b>Go Public</b> <i>Share Learning, Demonstrate Understanding, Take Action</i>	<ul style="list-style-type: none"><li>• Co-constructs expectations for final projects</li><li>• Shares the widest range of possibilities for sharing/performing</li><li>• Welcomes kids’ suggestions for these demonstrations</li><li>• Helps kids find real audiences and opportunities to share their knowledge and teach others</li><li>• Helps students reflect on content and process</li><li>• Co-creates rubrics to assess and evaluate projects</li><li>• Responds, assesses, and evaluates projects</li><li>• Helps kids to share the learning by taking action</li></ul>	<ul style="list-style-type: none"><li>• Co-construct expectations for final projects</li><li>• Demonstrate learning and understanding in a variety of ways: performances, posters, models, essays, picture books, tableaux, poetry</li><li>• Become teachers as they share their knowledge with others</li><li>• Articulate their learning process and how learning changes</li><li>• Reflect on their knowledge building and their cooperative process</li><li>• Pose and investigate new questions for further research</li><li>• Consider changes in their own beliefs or behavior</li><li>• Take action through writing, speaking, community work, advocacy</li></ul>

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Let us reiterate that while this representation looks comfortingly linear, the lived experience of inquiry circles is highly recursive; students are constantly shifting back and forth between stages as knowledge develops. Indeed, we could have drawn this model in a circle or flow chart (we tried it), but it would have taken some kind of six-dimensional hologram to reflect the actual complexity of inquiry. Still, the work is generally ordered; after all, you can't make a presentation about information you don't have. But take our word for it, when kids and teachers dig into an inquiry like this, the actual sequence of work is free-flowing, recursive, intuitive, and creative.