

Classroom Confidential

THE 12 SECRETS OF GREAT TEACHERS

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Contents

ACKNOWLEDGMENTS	xi
INTRODUCTION	xiii
Secret # 1 Great Teachers Are Equal Opportunists	1
<i>Capitalizing on How Kids Learn</i>	
What's the Big Idea About Learning? • How Kids Are Smart • Multiple Intelligences Go to School • Meet Lisa Bartoli • How Full-Brain Learning Looks • Thinking with Things—Learning Through Process and Projects • Equal Opportunity Assessments • Resources	
Secret #2 Great Teachers Are Power Brokers	23
<i>Building a Culture of Eptness</i>	
What's the Big Idea About Eptness? • Building a Class Resume • Why Great Teachers Insist on a Culture of Eptness • Ten Teacher Behaviors That Promote Eptness • How Am I Doing? A Self-Assessment • Social Safety and Eptness • Meet Ava de la Sota • Waking Magoun's Brain • Resources	
Secret #3 Great Teachers Are Ringmasters	43
<i>Nurturing Free-Range Students in a High-Stakes World</i>	
What's the Big Idea About Behavior? • Understanding Self-Accommodators • Understanding Camouflagers • Meet Linda Catanzano • Eight Strategies for Ringmasters • The Roots of Free-Range Behavior • The Law, Special Education, and 504s • Hope for Free-Rangers in a High-Stakes World • Resources	
Secret #4 Great Teachers Are Curiosity Seekers	67
<i>Fostering Success in Multicultural Classrooms</i>	
What's the Big Idea About Culture in the Classroom? • Meet Rafe Esquith • Culture-Blind or Just Confused? • Seeing Your Class Through Culture-Colored Glasses • Navigating in Multicultural Settings • Culturally Responsive Teaching Strategies • Cultural Awareness and Your Curriculum • Culturally Inappropriate Materials • Resources	

Secret #5 Great Teachers Don't Take No (or Yes) for an Answer 91
Teaching by Asking Instead of Telling

What's the Big Idea About Inquiry Teaching? • The Three Basic Moves • The Impact of Inquiry on Learning • Wait Time in a Hurried World • Planning Inquiry-Based Instruction • An Inquiry-Based Unit: The Rise of Civilization • Inquiry and Classroom Culture • Resources

Secret #6 Great Teachers Know a Hemingway When They See One 113
Getting to the Heart of Writing

What's the Big Idea About Writing? • From Craft to Art • Getting to the First Draft • Everyone's an Editor • How to Grow a Writer • The Fine Art of Journaling • Is There a Hemingway in the House? • Resources

Secret #7 Great Teachers Are Escape Artists 138
Exploring the World Beyond

The Lot Project • What's the Big Idea About Your Community as Classroom? • Escape Artists: Tips for Exploring Your Community • Capturing Epiphanies—Documenting Discoveries • Where in the World? Getting Smarter About Mapping • Down Memory Lane—Discovering the Used-to-Be Community • Historic Buildings—Learning Through Landmarks • Deep Mapping • Becoming an Expert • Culminations—Sharing Expert Knowledge with the Community • Resources

Secret #8 Great Teachers Are Gossipmongers 164
Putting the Social Back in Social Studies

What's the Big Idea About History? • Meet Bill Coate • Tools of the Trade • How to Make Documents Talk About History • How to Make Images Talk About History • How to Make Objects Talk About History • How to Make Buildings Talk About History • How to Make Books Talk About History • Encouraging Investigative Independence • You Were There—Historic Simulations • Authentic Assessments in History • Resources

Secret #9 Great Teachers Are Drama Queens 188
Using the Arts as a Second Language

What's the Big Idea About the Arts? • The Brain, Learning, and the Arts • Helping Students Learn Through Drama • Helping Students Learn Through Movement • Helping Students Learn Through Music • Helping Students Learn Through Art • Recognition • When All Is Said and Done • Resources

Secret #10 Great Teachers Are Insurrectionists **209***Learning Through Social Action*

Meet Barbara Henry, Ruby Bridges' Teacher • What's the Big Idea About Social Justice? • What Kids Learn from Social Justice • Planting the Seed • Taking Sides: How to Choose a Social Justice Project • Prepping Students for Action: Politics 101 • A Social Activist's Toolbox • Getting Smarter About Social Justice Through Primary Source Documents • Literature and Social Justice • Click for a Cause • The Downside of Social Justice • Improve Yourself, Improve Your Community • Resources

Secret #11 Great Teachers Speak in Tongues **234***Mastering Communication in the Information Age*

What's the Big Idea About Communicating with Parents? • Ten Essentials of Effective Communication • Cross-Cultural Communication • A Parent Conference Kit • Public Relations or Self-Defense? • What's in It for You? • Resources

Secret #12 Great Teachers Are Lifelong Learners **258***Reaching, Recharging, and Moving On*

What's the Big Idea About Teaching as a Famine Culture? • Connecting with Colleagues • Collaborating and Coaching • Meet Anne Brown, Mentor Extraordinaire • Connecting with Professionals Beyond Your Campus • Rethinking—The Moving-On Questionnaire • Job Searches and Sources • Moving On • Resources

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Introduction

I can't remember a time when I didn't want to be a teacher. It just seemed to be a self-determined fact of my young life. Somehow I understood that teaching involved learning, and learning was what I loved to do, for I was born with an extra gene for curiosity, a gift from my dear father, who was my first and best teacher.

As a teacher, my curiosity manifested itself in a low tolerance for boredom. Every few years I'd cajole my way into a new grade level until finally I'd covered the waterfront from kindergarten through middle school. I loved the chance to tackle a new curriculum, but mostly I just adored kids in any size, shape, or zip code. It didn't take long to discover that my restlessness was incompatible with classroom serenity. As a result, my kids and I became experts at beating the curricular bushes for intriguing projects that occasionally morphed into crusades. We lived and learned contentedly on the barricades, saving murals, defending endangered landmarks, and rewriting the history of our town to include its darker days of racial discrimination.

The most reassuring thing about curiosity-driven teaching was that as my kids grappled with nonstandard topics, their enthusiasm for learning exploded. At times their appetites were so voracious that it took all my energy not to feel like the poster girl for No Teacher Left Behind. Cramming continually to meet the challenge, I was supremely happy.

My greatest fortune was to have a wealth of mentors. Of course, my students were my best and most critical coaches when it came to authentic teaching. And in every school, I discovered a few great teachers who became great friends. In my last years in the classroom I met Dr. Paul Heckman, the quietest revolutionary in education. Actually, it was more like a collision. He

pushed me relentlessly to reexamine my fundamental beliefs about teaching, just when I was ready for a good, long rest on my laurels. But I wanted to be a great teacher, so I listened, dismembered my curriculum, and grew.

For twenty-three years I rose each morning and eagerly headed for a classroom. Most nights I fell asleep with a book in my hands, determined to learn more about learning. I was grateful to any author who could zap a few of my weary neurons violently enough to spark an epiphany.

Now I'm returning the favor. I wrote *Classroom Confidential* to help you have a few epiphanies of your own. First, I emptied a quarter century of ideas from my head. Then I went in search of some truly great teachers who could share their excellence with you. You get to meet Ruby Bridges' teacher and a man who cruises graveyards with his kids as an introduction to local history. You even get a recipe for pumpkin bread from the world's best mentor.

Classroom Confidential is your paperback mentor. And although it can never take the place of learning from your students or those intimate conversations with trusted colleagues, it can keep you company late at night and be a silent partner in your quest for greatness. So swing for the fences! Knock yourself out! I swear you'll never regret an ounce of passion or an hour of your life spent on the awesome task of helping children learn. Be a *great* teacher! It's the most amazing gift you can give yourself.

SECRET #5

Great Teachers Don't Take No (or Yes) for an Answer

Teaching by Asking Instead of Telling

In This Chapter:

- ◆ What's the Big Idea About Inquiry Teaching?
- ◆ The Three Basic Moves
- ◆ The Impact of Inquiry on Learning
- ◆ Wait Time in a Hurried World
- ◆ Planning Inquiry-Based Instruction
- ◆ An Inquiry-Based Unit: The Rise of Civilization
- ◆ Inquiry and Classroom Culture

Kids don't have to be in the gifted club or even wide awake to answer most of the questions their teachers pose. In fact, the level of dialogue in some classrooms is so rudimentary that many bright kids have completely abandoned the notion of school as a cerebral experience. That's why in many classrooms you encounter the phenomenon of the DA—the Designated Answerer. Designated Answerers have a single purpose in school—to answer any question the teacher asks. They spend most of the day with their arms in an aerial position, waiting expectantly, cooperatively, even slavishly, to field the next volley.

What's the capital of Iowa?

Des Moines!

What is the major export of Alaska?

Oil!

What do pandas eat?

Bamboo!

How many toes on your left foot?

Uh, five? (Seems like a trick question.)

Some classrooms have just one DA, tirelessly playing verbal ping-pong with the teacher from early morning through the closing bell. Other rooms are DA-rich. Three or even four contenders semaphore vigorously to catch the teacher's eye, or gasp as if being garroted to catch her ear. All for the honor of delivering the "right" answer, so the game can move on to the next round.

And where are the rest of the students? AWOL. Having a rich fantasy life. Working on a series of Baroque doodles, or drafting the great American novel, one clandestine note at a time. They're bored. Indifferent. Ripe for rebellion. Can you blame them? The teacher has made it clear that their presence is only required so that the body count matches the attendance sheet. Participation is strictly optional—maybe even unwelcome from students with inquisitive minds or an argumentative streak. And that's fine with them. School is simply a rehearsal for retirement, without the cane or walker.

The only thing that disturbs the metabolism of most students is when the Designated Answerer is absent or unexpectedly transfers to another school. Who's going to keep the teacher busy all day? The teacher may get a little nervous, too. Who *is* going to answer her questions? What will happen when she asks where Kenya is located, and no one volunteers "right on the equator" or leaps up and gestures toward the middle of the map? Luckily, teachers have a robust repertoire of emergency moves for situations just like this. Faced with stony silence, they repeat the question, "Who can find Kenya?" but louder, as if they've suddenly been transferred into a class for the hearing-impaired. If the silence persists, they're likely to bear down upon a hapless student and demand, "Adrienne, find Kenya!" or simply stab at the map with a yardstick, sputtering, "Right there! We talked about this last week."

Not a pretty picture. But it's pretty accurate. Too many schools and instructional programs that tout critical thinking seem to be fundamentally critical *of* thinking as a basic classroom activity. It takes a long time. It's messy. The outcomes are uncertain. And how do you assess something that has no right answer? The instructional day is so crowded with "experts," from textbooks and videos, to prescribed, scripted, time-driven curriculum that there's simply no place for students or teachers to say, "Wait a minute, I don't think I agree. Let's take a closer look at that."

What if teachers do want to dig in and try some rigorous thinking? Really probe kids to find out what they're wondering besides "Is it lunchtime yet?" They're not likely to get many takers. Any kid who's old enough to tie his shoes

without assistance is too savvy to play that game because from the first day of kindergarten, we teach kids how to *do* school. The teacher asks a question. It has one answer. He already has that answer, but he wants to hear it from a kid. In return for the right answer, the respondent will get a smile or a saccharine “that’s right” and the class will get another question to answer. That’s how you do school, and woe unto the student who breaks the rules, gives the wrong answer, or worse, asks a question back! Questions posed by students frequently earn the curt reply, “We’re not talking about that now.”

This is a graveyard for thinkers.

So kids protect themselves by not volunteering unless they’re certain of the answer. If you decide to change the rules by asking open-ended questions that seem more like an invitation to ruminate than simply recite, kids think it’s a trick. Their response? Industrial-strength silence.

Here’s the saddest part. That silence in your room is an echo of the silence in their heads. Their brains are gridlocked—intrigued by the notion of a question that really could have some interesting possibilities, and paralyzed by the skepticism that there’s just one right answer after all, and they don’t have it.

Enter Socrates.

What’s the Big Idea About Inquiry Teaching?

Socrates was one of the first educators to conclude that learning cannot be delivered. Like most great teachers, he believed that people learn best when they’re involved, and the way Socrates got them involved was to ask a great question. He spent his life asking and asking, annoying almost everyone in town, until finally they quenched his thirst for knowledge with a cup of hemlock. Happily, teachers who use Socrates as a model rarely share his fate.

The way that Socrates taught is called the Socratic or inquiry method. The word *inquiry* tells it all. It’s about motion—probing, eliciting, pressing for, searching, seeking, scrutinizing. Inquiry is an interactive, give-and-take-ish way to pursue learning with your students. It’s the opposite of those monologues called the didactic approach, where the teacher delivers large shipments of information to students who are apparently “learning.” In reality, many students simply gaze in the approximate direction of the speaker and silently refuse delivery. Occasionally the teacher breaks the monotony by firing a low-level question over their heads—Who was the first president of the United States? How many inches in a yard? Which is bigger, a molecule or an atom? Who fought in the War of 1812?—more as a check for consciousness than comprehension.

The inquiry method uses questions, too, but they’re open-ended. That means there’s no one right answer, since the purpose is to elicit students’ thoughts, and then help them examine their thinking. The answers to inquiry

questions are knowable to anyone within earshot, if the question is well-crafted and the students work at it by thinking.

Let's look at some didactic questions translated into the inquiry mode.

Didactic Questions

What shape is this leaf?

How was this tool used?

What color is this?

What is bark?

What animals migrate?

Who invented the first writing system?

Open-Ended Inquiry Questions

What do you notice about this leaf?

How might this tool have been used?
By whom?

How would you describe this color?

Why do you think trees have bark?

Why do you think creatures and people migrate?

Why do you think people invented writing?

Words like *think*, *would*, *could*, or *might* embedded in a question indicate inquiry in progress. They signal that there are many ways to answer the question, and typically the answers themselves stimulate more questions. So instead of the tidy game of ping-pong that occurs with didactic teaching, inquiry stimulates talking, puzzling, risking, and debating. Students feel confused, frustrated, tense, puzzled, affronted, shocked, determined, and sometimes triumphantly surprised at their own cognitive accomplishments.

Inquiry demands effort. Teachers have to work hard devising great questions, but the good news is that kids have to work harder because inquiry forces them to root around in their heads and come up with details, examples, evidence, ideas, theories, and speculations. In an era when sound bites have replaced communication and thought, this is revolutionary. The teacher listens, thinks, and asks another question and perhaps another to push students' thinking. The result is that kids get smarter through their own efforts. They construct meaning by interacting with others, rather than waiting in a persistent vegetative state for another delivery of information.

Where does inquiry fit in your teaching day? Great teachers are perpetually in inquiry mode. They use inquiry in the moment, to respond to students' remarks. For example, if a student complains, "I don't get why we have to study history, anyway. All these people are dead, so what's the difference?" An inquiry-type response would be, "That's an interesting question. Why might it be useful for us to learn about things that happened in the past?" If you train yourself to consistently respond to questions and remarks with probing questions, students learn to think first, or pose better questions geared toward finding an answer, not just registering a complaint.

Many teachers use inquiry to introduce a specific topic in a content area, such as understanding winter migration routes, examining the cause of low voter turnout, or analyzing strategies to combat discrimination. Great teachers take inquiry much farther, using a set of inquiry questions as the engine to drive an entire unit of study, such as the rise of civilization, the Civil War, or adaptation in animals and plants, which may last all year. Inquiry, done well, stimulates full-throttle cognition. There are few things a teacher can do that are more exciting or exhausting. Inquiry teaching truly is a contact sport.

The Three Basic Moves

There are three basic moves in an inquiry approach to teaching. Master these and you're on your way to creating a gymnasium for youthful minds.

1. Ask initiating questions.
2. Ask questions to respond and follow-up.
3. Insert information at key points.

Move Number 1: Ask Initiating Questions

Teachers who use the inquiry method launch their lessons with an open-ended question that identifies the topic and jump-starts the discussion. For example, if you were starting an inquiry lesson on the history of your community, you might say: "Our town was founded in 1793, just over two hundred years ago. Why do you think people came to live here?" Given time and encouragement, students will comment on the location, resources, weather, climate, geography, proximity to other places, exile, adventure, vacation, health, opportunity, accident, or luck. They may go for fifteen minutes, rummaging for reasons. How do you get this much discussion out of kids who are used to relaxing in the shadow of the Designated Answerer? Each time students volunteer an answer, you acknowledge their interesting contribution and then say, "What else? What's another reason people would come here?"

What else? is one of the most powerful questions you have to galvanize all of your students, not just the smarties. *What else?* trains your kids to treat the obvious, superficial answers as warm-up for thinking rigorously about anything from mitosis to medieval art. By your insistence on multiple answers to the same question, you slowly convince kids that there is no one right answer. There are as many answers as there are minds in the room, and you're desperately interested in all of them. You will find many examples of initiating questions in this chapter, so for now let's move on to the second basic move an inquiry teacher needs to master—responding to students' remarks.

Move Number 2: Ask Questions to Respond and Follow-Up

Many teachers ask good initiating questions. They know where they want the discussion to go, and they craft a question that could take them there along a scenic route. The problem is that when students offer listless, sloppy, half-baked answers, they accept them. Kids blurt out some fuzzy, quasi-related string of words, ending with a rising tone that functions as a question mark in an otherwise declarative statement. The teacher feigns satisfaction and moves on. End of inquiry. Actually, it's pretty much the end of thinking once kids realize that this is not a precision event. A rough approximation will do.

Let's return to our question about local history. Suppose you ask, "Why do you think people came to live here?" and get the reply, "Maybe they came here because they were scared?" There are a number of possible ways to respond. Some teachers would shoot the kid a puzzled look and move on, as if he'd never spoken. Or supply a rational subtitle for his remarks—"I think Jeremy means people left some pretty dangerous places to settle here because they thought it would be safer." If he didn't mean that initially, he will by the time you're through. Perhaps you'll say "maybe" with a look of serene blankness, all the while thinking, "Jeez, with answers like that, we'll never get through this material!" Reaching the conclusion that this whole questioning idea is a bad one, you launch into an explanation of why people settled in your fair town, and save your questions for a pop quiz.

Whereas, a teacher bent on inquiry would lean in. That's right. You need to get closer so you can find out what that student means. So it's time to ask another good question! Here are some ways you could respond that would push a student to rethink and clarify:

"That's an interesting idea. Can you tell me more?"

"Can you tell me about the kinds of things that might scare people into leaving their homes and coming here?"

"What kind of things scared people in the past?"

"Why would moving be a good solution if you were scared?"

"Do you know about any of the things that scared people two hundred years ago when our town started?"

All of those questions put Jeremy back in thinking mode. It makes him accountable for what he said.

Follow-up questions generally come in five flavors. They're used to: clarify, expose points of view, probe assumptions, push for reasons or evidence, and probe implications or consequences. That looks like a lot to keep track of, but your gut will point you in the right direction. You can use the following lists to identify follow-up questions that press students to refine their thinking.

Clarification. Students frequently need help figuring out what they're trying to say. They make statements that are ambiguous, or they lump several different concepts together. Sometimes they blend information that's true with notions that are false, nullifying their statement. Here is an example of a confusing statement with sample questions that you can use to push students to be clear about what they think and say.

Example: Some Indians had these ceremonies where they would burn people after a war or something.

- What do you mean by _____?
- Could you give me an example?
- What is your main point?
- Could you explain that further?
- Could you put that another way?
- Would you say more about that?
- Why do you say that?
- What do you think is the main issue here?
- How does this relate to our discussion (problem, issue)?

Points of View. Students need help learning to distinguish opinions from fact. The following questions can be used to probe arguments or statements that reflect a student's point of view, but are stated as fact and fail to acknowledge other perspectives.

Example: Having clean air is a good idea but it costs too much money.

- You seem to be approaching this issue from a monetary perspective. Why did you choose that point of view?
- How would other groups of people respond? Why? What would influence them?
- How would you answer the objections that environmentalists would make?
- What might someone who believed _____ think?
- Can/did anyone see this another way?
- What would someone who disagrees say?
- What is an alternative?

Assumptions. Helping your students uncover assumptions in their thinking is like peeling an onion. You just keep exposing layer after layer of ideas until you reach the single, sometimes erroneous thought underlying their statements. It's hard work. You have to be well-rested and tenacious. But this process really sharpens their ability to evaluate ideas presented by writers, politicians, and advertisers. Use the following questions to probe students' thinking when unacknowledged assumptions are embedded in their statements or arguments.

Example: Vouchers are great because then parents can send their kids to any school they want.

- What are you assuming?
- What could we assume instead?
- You seem to be assuming _____. Do I understand you correctly?
- All of your reasoning depends on the idea that _____? Why have you based your thinking on that?
- You seem to be assuming _____. How would you justify this?
- Is it always the case? Why do you think the assumption applies here?
- When wouldn't your statement be true?
- Why would someone make this assumption?

Reasons or Evidence. Teaching students to include reasons or evidence in their statements lifts their dialogue to a more refined and convincing level. It's an excellent way to strengthen the fundamental skills needed for persuasive writing, debate, or public speaking. Use the following questions to prompt students to provide evidence that what they said is credible, or to explain the reasons for a particular belief or statement.

Example: Most of the people who lived in the colonies in the 1770s didn't really care about the revolution.

- Who would be an example of that?
- How do you know?
- Why do you think that is true?
- What led you to that belief?
- What would change your mind?
- What other information do we need?
- Could you explain your reasons to us?
- Is there reason to doubt that evidence?

- Who is in a position to know if that is so?
- What would you say to someone who said _____?
- Can someone else give evidence to support that response?
- How could we find out whether that is true?

Implications and Consequences. Rigorous thinkers are trained to ask themselves: “And then what?” You can use the following questions to help students thrust their thinking forward in time or through a series of events to hypothesize about the results and analyze the wisdom of their ideas.

Example: If we could just get rid of taxes, we wouldn't have so many poor people. That would be good for our city because we have too many poor and homeless people.

- Tell us more about how that would work.
- When you say _____, are you implying _____?
- But if that happened, what else would happen as a result? Why?
- What effect would that have?
- Would that necessarily happen or only probably happen?
- What is an alternative?

Move Number 3: Insert Information at Key Points

Sometimes eager teachers ask: “If I do inquiry teaching, when do I get to share all the wonderful things I've learned through my own research? Is there a place for telling in an inquiry approach to learning, or do I just ask questions all the time?” Inquiry isn't just a matter of uncovering what your students already know. That's certainly an essential activity because excavating prior knowledge lays a foundation on which to build new ideas. But there comes a point in every discussion where kids need new information to get to the next level. That's where your expert knowledge comes in.

For example, if you're talking about ancient civilizations, your kids may deduce the need for laws, but they could talk all day and never think up the Code of Hammurabi. So you insert critical pieces of information about Hammurabi, including a few intriguing facts. According to Hammurabi's laws, “If fire breaks out in a house, and someone who comes to put it out cast his eye upon the property of the owner of the house, and take the property of the master of the house, he shall be thrown into that self-same fire.” That should get their attention! Then point them in the direction of the primary source documents on ancient laws. Start their investigation with a two-pronged

question that makes them search and think, such as: What types of laws did Hammurabi write and how are they like our laws? That way you focus their research and indicate the starting point for your next discussion.

So great inquiry teachers ask open-ended questions to launch a discussion and probe student thinking. Building on that discussion, they *teach*, using stories, anecdotes, documents, charts, graphs, photographs, paintings, diaries, and so forth. In this interval, students get more in-depth information that primes them for more questions and thinking.

Another skill of the inquiry teacher is helping students keep track of *what we know so far*. I like to sketch on the board as students talk. These scribbles aren't masterpieces or even intelligible to an outsider, but I've found that even cartoonish images surrounded by words help visual learners stay focused and track the discussion. You can also use lists, phrases, diagrams, or graphs to illustrate the points students make. Then pause periodically to summarize what's been said and identify the parts of the question that are still unresolved. Using this process, you model how good thinkers tackle a question and stick with it until they're satisfied. Your students learn to combine their ideas with remarks from other students, add in the information you provided and their own research "discoveries" to construct a solid body of knowledge and create new ideas. All the while, they're honing their thinking skills.

The Impact of Inquiry on Learning

You may be thinking that inquiry was a great idea in ancient Athens where people like Socrates had time on their hands and servants to tidy up after them. Whereas you're alone on the front lines of the education battle with jumbo-sized helpings of responsibility and little support. Probing questions and long answers require time that you don't have. They take patience, which may also be in short supply. Plus, teachers using the inquiry method must attend to every word students utter, and evaluate both the articulation and the thinking behind it. That's a hell of a lot more work than asking "Who was the fourth president of the United States?"

So why do great teachers use the inquiry method?

The Brain Gym

Did you know that the average teacher speaks 140 words per minute? But the average kid can hear 1,000 words per minute, and youthful brains can process up to 4,000 words per minute! Four thousand! So when you're standing in front of your class in a declarative mode, you're a slow-motion phenomenon in a high-speed world. Even if you're broadcasting at a tongue-twisting rate, a kid's

brain has lots of time on its hands. And if you've chosen a topic that holds exactly no interest for your students, you're a silent movie playing for a captive audience. The urge to yell "fire" must be overwhelming.

What's going on behind kids' foreheads during didactic bouts? If you say to your students, "What's the capital of Minnesota?" some of them will acknowledge your intrusion long enough to think "St. Paul," and then stop thinking about you. Their brains return to a topic of their choice, not remotely related to Minnesota. A bunch of other students will hear "What's the capital of Minnesota?" and decide after a nanosecond, "I don't know." But their brains keep on thinking and most of their thoughts are negative: What if he calls on me? I'll look stupid. I should have studied more. Why can't I ever remember anything? Who cares about Minnesota, anyway? I wonder if I can get a hall pass? Either way, it's not a great use of the real estate between their ears.

Inquiry questions catapult kids out of their La-Z-Boys. Faced with a single substantive question that seems to have lots of answers, their brains kick in like the search engine on a computer. All of a sudden they think, "What do I know about this?" Signals go out in every direction. Synapses crackle. The hunt is on, and it looks different in every head. One student is searching for facts while another thinks in pictures. Some dredge up personal experiences, others work from logic, or extrapolate from parallel situations. The point is, they're all on task. One good question can produce 200 cranial hits. Inquiry questions create focus, put the brain in gear and keep it there.

The Owner's Manual

When it comes right down to it, a brain is a pretty good thing to have. It's helpful in school and invaluable in most real-life situations, except maybe on a blind date or talk-radio. But like any really handy appliance, you have to know how to use it. Inquiry takes kids through the owner's manual for their brains. It helps them identify and begin to consciously examine the elements of thought: concepts, evidence, assumptions, implications, consequences, interpretations, conclusions, and points of view. Once they've studied the owner's manual, kids begin to notice the structure of their own thoughts. With a little encouragement, they'll be critiquing the utterances of people around them—their peers, school administrators, coaches, movie stars, and news commentators. And yes, you're likely to take a few friendly barbs, but it's worth it to see your kids running through all their cognitive gears. I like to tape sound bites of politicians or their spinmeisters, and let my kids dissect their utterances for batting practice. With a lot of hard work on your part, you can raise a crop of students who consciously use their brains to find and evaluate information, solve problems, and create new ideas. Ultimately you want them to be firmly in the driver's seat of

the learning machine you've built, so that when confronted with a dilemma or a meaty question, they confidently declare "Slide over. I can handle this."

The Thinking Person

So how does it actually work? How do your kids go from dependent muddle-heads to autonomous thinkers? Pause, if you must, to decide if you really want a room full of autonomous thinkers, but then think how much fun it would be to spend every day with several dozen smart people. You'd be the envy of most adults in the business world, universities, or government—need I say more?

When you approach teaching through inquiry, it's like you've put a well-trained mind on speakerphone. You ask a question. That's the inciting incident for the brain. Then your kids make lots of remarks and observations. Their initial responses represent the thoughts that are triggered in the mind in response to your initial question. But here's the skill development: When you ask questions back to probe your students' thinking, you play the role of the inner voice that really good critical thinkers hear when they're working their way through a problem. In other words, you make external and visible the inner process of critical thinking. Eventually your kids internalize the process. Hence, autonomous thinkers.

Training in the inquiry method conditions the brain to raise basic issues, probe beneath the surface of things, and pursue problematic areas of thought. It also helps students:

- Develop sensitivity to clarity, accuracy, and relevance in the thoughts, arguments, and writing of other people.
- Arrive at judgments through their own reasoning.
- Adopt a penetrating and rigorous approach to topics from literature to political science.

Continuous exposure to inquiry questions teaches kids how to think in situations outside of school, to greet life with curiosity and healthy skepticism. It's possible that using the inquiry method may be one of the greatest contributions you can make to individual students and society. Why? Because real life is not a true/false or multiple-choice test. It's a series of critical judgments, from How fast can I drive on rain-slickened streets? to How will I choose between six candidates running for the same office? It's not what your kids read, but what they learn to read into a text and between the lines that makes them thinkers. Inquiry equips kids for life. Can you think of a better way to spend your time?

Wait Time in a Hurried World

By now it should be clear that inquiry teaching is an intensely cerebral activity for teachers and students. You'll need to be well-versed in the subject matter you're exploring with your students—but what great teacher isn't? Your kids need to think. But there's the rub. Thinking takes time. Suppose you ask: What do you think was the hardest thing about being a sailor on a voyage with Christopher Columbus? Suddenly there's a flurry of intracranial activity. Kids are digging, sorting, and evaluating. They're hitting the recall button, then applying the test of historic empathy: What would I hate the most about all those hardships? But that takes time. Different amounts of time for different kids, since even the smartest people process information at varying speeds.

Meanwhile, the room is as quiet as a tomb. Don't panic. And whatever you do, *don't talk*. This will be a real test of your strength, since most teachers suffer from *horror vacui*. Typically, when teachers ask a question and get nothing in return but several dozen blank stares, they assume that something has gone terribly wrong, and switch to damage control. You know the drill. Talk louder, as if checking the acoustics. Rephrase the question to, "What made the Columbus voyages so difficult?" Now you have two slightly different questions in play, and your students must decide whether they should keep working on the first or shift to the second. Overanxious teachers may blurt out as many as four reiterations of the same question in a continuous string. Confusion abounds. To increase their odds of getting an answer, any answer, they restate the question in an either/or format with answers conveniently embedded within. "Was it the food or the uncertainty that made it so bad?" At this point, sharp students may pick up the scent. "Now we're getting somewhere. That's what she's fishing for." More silence. In a final act of desperation, teachers pounce on a spectacularly inattentive student, or simply answer the question in disgust and shift back to a more restful monologue.

What's going on here? It turns out that teachers, like kids, have been conditioned to the ping-pong approach to classroom dialogues. Researchers studying wait time discovered that when teachers ask a question, they get nervous if they don't hear an answer within three seconds. One. Two. Three. Three seconds? How much thinking can a kid do in three seconds? Or even five? Not much. Nonetheless, once the clock starts ticking, there's precious little time before teachers hijack the thinking process. *They simply can't wait.*

If you want inquiry to work, you must quell the urge to fill the void, because silence is your friend.

How do you develop your wait-muscle? Smoke. That's right. Lean against the chalkboard, assume the most nonchalant pose you can muster, and *visualize* smoking. Not the guilty little nips of people who swear they're trying to quit.

I mean those long, pensive, lung-inflating drags that dyed-in-the-wool tobacco lovers take, after which they squint at a far-off point and exhale in slow motion, loving every moment. Smoke like that while you're waiting, and it will send a message to your students that you have all the time in the world. You're just going to hang out contentedly until they're ready to talk because your only interest is hearing what they *think*.

Smoking is so many light-years from Right-Answerland, your kids may go into shock. And that's the second benefit of smoking. While you're learning to relax, your kids are getting nervous. Silence is a great medium for thinking, but if it goes on too long, they'll begin to feel the pressure. No one's talking. Someone should be talking by now, and it's clear you're not going to crack. Eventually and with great hesitation, a hand goes up. Time to stub out your cigarette and play ball! Haltingly, the first brave soul takes a crack at the Columbus question—"the water got sour after a while and they couldn't drink sea water, so they were pretty thirsty." "Absolutely," you reply, and jot *sour water* on the board.

At this point all the other students relax because you got what you wanted. Except, what's this? You turn, fix them with a look of intense interest, and say, "What else?" A ripple goes through the group. There's another answer? They go back to thinking. And you may need to smoke a little more, until another hand comes up. "They got lost a lot because their maps were bad, so they didn't know if they'd ever get home." Repeat the process, lavishing recognition on this bold thinker, adding *bad maps/lost* to the list. Then ask, "What else?" At this point kids may conclude that you're completely indiscriminate. You accept every answer and dole out commendations. Courage spreads like measles. Eventually you'll convince your kids that you're truly interested in their ideas, not just prospecting for the "right" answer. Then hands will fly up and you'll be too busy to smoke.

Keeping the Brain in Motion

Once you've built up your wait-muscle and grown immune to the occasional bouts of silence, you'll be able to focus on the skills you'll need to master in order to orchestrate inquiry discussions. Think of yourself as a giant synapse in the class's brain. It's your job to connect and redirect all the ideas your kids are spewing out. Another image that works for this is air-traffic controller. In effect, you track the progress of the hunt for answers and send up a flare when kids hit paydirt. But what else?

As the orchestrator of this cerebral jamboree, you need to:

- Encourage your students to slow their thinking down and elaborate on their ideas.

- Stimulate further discussion with probing questions.
- Use the word *wonder* a lot, as in “I *wonder* what you mean by; I *wonder* what that means to you; I *wonder* how that relates to what we already know about; I *wonder* how you could test that idea; I *wonder* if that makes sense to other students.”
- State aloud your own personal wonderings about the discussion, sending the clear message that students are expected to listen and think seriously about the whole conversation, not just sit and wait for their turn to speak.
- Translate your students’ curiosity into probing questions.
- Model analytic strategies.
- Help students clarify errors in reasoning by formulating questions that they cannot answer except by correcting the faulty reasoning.
- Convey your utmost respect for your students as thinkers.

Planning Inquiry-Based Instruction

Inquiry is not bound to any one subject because it’s not about content. It’s a way to think about content. Open-ended questions tease kids to wonder, whether you’re examining mummification or multiplication. Any part of your curriculum that requires thinking is ripe for inquiry. Any part that doesn’t require thinking—well, I’ll leave that up to you. Whether you’re planning a single lesson or a six-month unit driven by open-ended questions, you’ll want to start with some basic considerations.

- What’s the big question about this topic?
- What other questions will guide the conversation to its goal?
- What levels of questions should be included—factual, inference, interpretation, transfer, valuing?
- How should questions be sequenced?

The Big Question

The big question captures the goal of your lesson or unit. It unifies all the work that will follow. To identify the big question, ask yourself, What’s the point of this lesson? What do I want kids to learn? Then turn that into a question. For example, if I want kids to explore local history from the point when nonnative settlers first arrived, my big question might be: Why do you think people settled in our town in the late 1800s? Through the inquiry process, students should be able to answer the big question knowledgeably, listing or discussing all the factors that prompted people to take up residence in the area.

Once you're clear about your big question, post it, highlight it, publish it. Keep it in front of kids' eyes to unify their thinking and their work. Kids who are raised on big questions learn to evaluate every idea that's presented, every discussion point, every document to see if it helps them toward a big answer. They actively scrutinize information instead of being passive observers of the learning landscape.

Questions Across the Curriculum

Let's look at some questions that could be jumping-off points for inquiry lessons. You can use them as is, or modify them to suit your particular work. I just find it easier to improvise from models than to stare at a blank sheet.

History/Social Science

- Why do you think people invented language? What problems do you think they encountered?
- How do you think people invented the wheel?
- Why do you think people leave their homeland?
- Why do people go exploring?
- What does it take to sustain people in a city?
- What systems need to be invented to make a city work?
- How is city life different from county life? What are the advantages and challenges of each?
- Why do you think some colonists preferred having a king to independence?
- What are the first things you would need to do if you were setting up a new country?
- Who should be allowed to lead our country? Who should be allowed to vote?
- Why might the United States make reparations to Native Americans for treaty violations?
- When might the invasion of another country be justified?
- How is your life different from life during the Civil War?
- What is your reaction to the fact that Thomas Jefferson owned slaves?
- Is slavery ever justified?
- What do you think the government should do about homelessness in our city?

Science

- What do you think computers will be like in the year 2050?
- Why do you think certain birds don't migrate?
- What do you think is the explanation for crop circles?
- What do you think people can do to reduce pollution?
- Do you think product testing on animals is ever justified? Why?
- What problems should science tackle in the next fifty years?
- What would be an effective way to prevent the extinction of certain African mammals?
- What can be done to protect homes from annual flooding?
- What would be a way to reduce traffic accidents during snowstorms?
- What do you know about trees?
- What is similar about ants and bees?
- What kind of shelter could you invent for people living in the desert to protect them from extreme heat and cold?
- What ideas do you have for reducing famine?
- What are some uses for buildings that are going to be demolished?

Literature

- Which poem do you think captured the feeling of being in a battle best? Why?
- What experiences have you had that are similar to the main character?
- If you could meet any character in this book, who would it be and why?
- If you could be any character in this book, who would you be and why?
- How would it change this story if it had been set in the mountains?
- Why do you think the author set this story at sea?
- How does the author let you know what the characters are feeling?
- If you were in this story, how would you have handled the conflict?
- What do you think will happen to the characters after the story ends?
- How would the story be different if the author told it from the bully's point of view?
- If the main character enrolled in our school, do you think you'd become friends?
- What advice would you give the underdog?
- How could you improve this story?

The Arts

- What does that music remind you of in your own life?
- What feelings do you think the composer was trying to convey?
- How would this composition be different if it was played on a piano instead of a violin?
- What images do you see in your mind when you listen to this music?
- What kind of tools might an artist use to make a painting like this?
- Why do artists take photographs?
- Describe what's happening in this painting.
- How are buildings and sculptures similar? Different?
- How is a sculpture different from a painting?
- What textures do you see in this sculpture?
- How would you describe the lines in this painting?
- Why do you think artists paint portraits—pictures of people?
- What patterns can you find in this painting?
- How would you describe what the colors are doing in this painting?
- What do you think gave this artist the idea for this sculpture?
- What story do you think the artist is trying to tell?
- If this sculpture could make sounds, what would you hear?

Math

- What are some ways we can measure the length of the soccer field?
- Why do you think people invented numbers?
- What's the easiest way to add four numbers?
- Why do you think we use commas in big numbers?
- How can you tell this division problem in words?
- How can you show it in pictures?
- What do you notice about the four basic shapes?
- What are some rules you would teach a student just starting to learn the multiplication tables?

An Inquiry-Based Unit: The Rise of Civilization

The year I was teaching humanities in a multiage class of ten-, eleven-, and twelve-year-olds, the focus of our curriculum was ancient civilizations, with a particular focus on the invention of democracy. We would be looking at cities

and societies, past and present, starting with life in Mesopotamia about six thousand years ago. Initially I wanted to explore the concept that when people decided to abandon nomadic and agrarian life for permanent settlements that became cities, there were preexisting conditions that allowed that to happen in one place as opposed to another. Specifically, this area was in the Fertile Crescent between the Tigris and Euphrates rivers. In addition to certain environmental conditions, people would have to develop tools and systems that would allow the permanent concentration of a large population in one area. I wanted my students to think their way through the stages from nomad to reading-writing-law-abiding city dweller. It was my goal to pry out of them anything they knew about civilizations by asking a series of strategically sequenced questions.

Here are a few of the big ideas that they raised and fleshed out in those discussions: that there are advantages to living in settlements rather than being nomads; that once people began to live together in large concentrations, they created a demand for certain agencies, systems, and services. New jobs evolved. Institutions sprang up that needed to be housed in structures tailored to a specific purpose, thus they had differentiated architecture—temples, courts, housing, palaces, storage facilities, and markets. The resulting division of labor created free time and a need for entertainment, which begot music, dance, and drama.

The questions I used to guide these discussions were based on my own research and reading. I built each lesson around two or three questions that would prod my kids to think. Only after pumping them dry of any relevant ideas would we plunge into the actual historic materials—books, primary source documents, artifacts, novels, and simulations that revealed the fine details of life in Mesopotamia. The following are the questions I used as a skeleton for our inquiry unit on early civilizations.

- Why might people want to live together in cities or towns rather than being nomads or farmers?
- What conditions would be necessary to support large groups of people living together in a city/town?
- What are the advantages of city living? What are the disadvantages?
- What knowledge or developments would be necessary to build a civilization versus nomadic hunter/gatherer lifestyle?
- How do humans organize their existence when they live together in large numbers?
- What would you consider sufficient evidence to indicate the presence of a city?
- Looking at this Sumerian frieze, what can you infer about their society?

- What jobs might be created in such a society?
- What would have been the main building materials in the Sumerian cities?
- What buildings would they need?
- How would the rise of cities create enemies or conditions for war?
- How would that influence city building and architecture?
- What conditions would stimulate trade?
- Why did the Sumerians need to invent writing?
- What are the challenges in inventing a writing system?
- How would writing change their society or civilization?
- Why would a set of laws like the Code of Hammurabi be necessary?
- What categories of laws would the Sumerians need to have an orderly society?

As you can see, all of these questions stimulate multiple answers, which spawn questions of their own. One or two questions would be enough for a morning's romp in Mesopotamia. I would ask a question followed by What else? What else? In addition to asking questions, I was the note taker or scribe, making visual models on the board to document the ideas and facts we were accumulating. Students kept notes of their own in any format that would help with recall and assist them with their own research projects and assessments. Some made annotated drawings, others favored lists, phrases, or diagrams. Soon we had a board full of notes and sketches representing their collective knowledge. Then we'd flesh out the tantalizing details with slides from the local art museum, replicas of artifacts, floor plans of palaces, cuneiform tablets, read-aloud novels, trade books, and guest speakers.

We hit the jackpot when we discovered a scholar at the local university who was fluent in cuneiform. She spent a morning reading old clay shards and stone etchings to my kids—deeds for houses, wedding contracts, and business deals, all carefully recorded in symbols that resembled bird footprints. This was a primary source document bonanza that let us witness daily life in the Fertile Crescent. Take a look at the text from a rental agreement on a wagon that was used for traveling between Babylonia and Palestine. The contract protects the owner's wagon from being driven the long route along the coast, rather like a mileage limit when you rent a U-Haul truck.

A wagon from Mannum-balum-Shamash, of Shelibia, Shabilkinum, son of Appani[bi], on a lease for 1 year has hired. As a yearly rental $\frac{2}{3}$ of a shekel of silver he will pay. As the first of the rent $\frac{1}{6}$ of a shekel of silver he has received. Unto the land of Kittim he shall not drive it.

For the big finish that day, my kids learned to write their own cuneiform messages in damp clay using sharp sticks.

Later in the year we laid the Code of Hammurabi alongside our own municipal codes and marveled at the similarities. We attended city council meetings and monitored local elections to see how far we've strayed from the Greek's invention of democracy. By the end of the year, my students had attended 246 public meetings, testified before the Landmarks Commission, the Pier Restoration Corporation, and the City Council. They dissected an environmental impact study about restoring the breakwater in our bay and trooped into a public meeting with the Army Corps of Engineers with a long list of—you guessed it—questions. The startled corpsmen were clearly unprepared to debate their report line-by-line with thirty citizens too young to vote and too fired up to be intimidated by a six-foot colonel listing ever so slightly to the left from the weight of his medals. That year my kids didn't just learn about democracy. They reinvented it before the wondering eyes of their parents and one very proud teacher. And they did it by mastering the art of asking good questions.

Inquiry and Classroom Culture

If you use the inquiry method consistently, the culture in your classroom slowly but perceptibly shifts. There's no Designated Answerer because kids discover that they're all capable of high-level thinking and together they can create new knowledge. Individual students become the recognized experts on various subjects, so their peers go to them when they need the definitive answer on Edison, or Elizabeth the First, or edible mushrooms. It's a powerful feeling to be an expert, and it gives kids a tiny glimpse of what they can do with their brains. Perhaps the most important development is that your students become experts on the subject of learning. They've learned how to learn. That's a portable skill that will serve them for life.

As you get more comfortable with this back-and-forth rhythm of teaching, your kids will get excited because they realize they're sharing the driver's seat in this mental road trip. They consciously, even viscerally experience themselves learning, and at the same time they have the thrill of teaching. They see the lightbulbs going on in their peers' eyes, and enjoy the heady feeling of being one of the "smart" kids, maybe for the first time in their career. Or they notice the way the topic lurches in a whole new direction when they make an insightful comment. They get a rush of pure adrenaline when they ask a challenging question that hasn't occurred to anyone in the room, including the teacher! When learning looks like this, it's not only a contact sport, it's addicting. Even better than recess or snacks!

Beyond the obvious notion that inquiry discussions strengthen critical thinking, there are plenty of other academic benefits you can reap without any extra effort. Inquiry sharpens speaking and writing skills; it promotes vigorous, motivated reading of adult-level material, as kids pursue their own questions.

*I cannot teach anybody anything.
I can only make them think.*
—Socrates

The research center in your room will be the in place to be. Inquiry provides greater access to the curriculum for more students with longer lasting effects. In an inquiry-based classroom, kids no longer *do* school. They don't take

deliveries. They create knowledge by thinking together, and that knowledge is more potent than anything found in a textbook.

One fine day, dialogue will break out among your students. They'll shoot questions directly at each other, and for as long as it lasts, you're out of a job. This is the highest compliment you can receive from your kids. Cherish it and then go out and do something really nice for yourself. You're a new-age Socrates, and you didn't even have to sip the hemlock.

Resources

- Cecil, Nancy. 1995. *The Art of Inquiry Teaching: Questioning Strategies for K–6 Classrooms*. Manitoba: Penguin Publishers.
- Whitin, Phyllis, and David Whitin. 1997. *Inquiry at the Window: Pursuing the Wonders of Learners*. Portsmouth, NH: Heinemann.