Inquiring Minds Learn to Read and Write:

Inquiry, Questioning, and Discussion strategies for promoting literacy and learning across the curriculum

By
Jeffrey D. Wilhelm
Ph. D.
Boise State University
The man who agrees with us that some question, little regarded by others, is of great importance can be our Friend. He need not agree with us about the answer. … C.S. Lewis (1898-1963), *The Four Loves*, 1960 p 97

**Dedication**

The Lyle family, especially Gene and Doris – who always took their students seriously and encouraged me to ask questions about serious issues

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This began several years for Paul and me of experimenting with various kinds of inquiry and design that led to student-designed artifacts with hypermedia, websites, Lego Logo robotics, video documentaries, museum exhibits, drama, social action projects and many other formats. Without the help of Rich, Julie and especially Paul, a fabulous person and team teaching partner, this kind of teaching and this book project would have been impossible.

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In writing this book, I’ve gleaned ideas from over 23 years of classroom teaching and
professional sharing. I’ve tried my best to trace the provenance of various notions to particular teachers and students, but welcome any emendations for those I may have missed.

Introduction

Why do we have to do this stuff? How is it going to help us?

[Preview Box]
Major points of this chapter:
* All content areas are on-going conversations about problems and issues that deeply matter in the world.
* The most powerful teaching is informed by an understanding of how students best learn.
* Reading, writing and learning strategies must be taught in meaningful contexts in which these strategies can be immediately used.
* All of what you already teach can be more powerfully taught by reframing it in terms of big questions.
* Classroom conversations are a form of inquiry that can lead to deep understanding.
* To fully understand, think, and talk about classroom conversation as teachers, it is helpful to know important ideas and terminology from the study of talk (i.e. discourse research) and how talk helps people construct and use knowledge.
* This book is organized to navigate you from some basic theoretical tenets to practical applications. The practical elements will help you organize instructional units around big questions, promote powerful student conversations around major ideas, and assist you and your students to ask the kinds of questions they need to ask when they read and think about reading and writing particular kinds of texts.
[End box]

I recently had the great pleasure to see a distinguished lecture by the famous Harvard biologist E.O. Wilson, “the father of biodiversity” and author of several groundbreaking books like The Future of Life, The Ants, Biodiversity, and Consilience.

This quote was particularly resonant: “Biology, like all disciplines, is a discipline of inquiry. It is inquiry that makes a discipline. If we don’t teach students how to think and inquire like biologists they won’t have learned biology. If they don’t get down on their hands and knees in the dirt, they will lose the thrill of biology – the thrill of discovery and connection to the subject.”

Throughout the question and answer period, Wilson promoted “hands-on, minds-on learning”. “Work [students] into the fundamentals of the subject by working on real problems of concern to them and to the discipline.”
In response to one question, he passionately maintained that “The absolute worst way to teach biology is bottom up. Lots of teachers think kids need to know the basics and build from there. They start with molecules. This is absolutely the wrong way to teach. It is not how we learn. It is not how disciplines create knowledge. Start with the big issues and questions and problems that drive the discipline! Go top down – tell the students that you are going to consider interesting questions that organize the subject. . .

“You have to ask and pursue the big questions: If you start with molecules, you’ve lost them! Who cares about molecules? No one does, unless they are pursuing a question that requires an understanding of molecules. So start with questions like: What is the significance of sex, biologically speaking? Is sex even necessary? Now you’ve got them! Or ask: Why must we die? How are organisms related? Even better: how are we related to bacteria? Then you have their attention! Now you can get them into molecules, chemistry, biological principles and ethics and so many other things in no time flat. From a good question it is a short step to any concept of importance.”

Wilson expressed that his own recent work was driven by the question “How is man affecting life on earth?” and the related questions: “How is our impact affecting the future of life and of man, and what can be done to reverse this?” Powerful guiding questions, he explained, are what drive and organize all disciplines. These questions are why disciplines exist.

He concluded his remarks by arguing that students must be connected to how knowledge is made and how knowledge can make a difference if they are to become engaged as learners and participants in transforming the world into a better place for all creatures. He indicated that religious leaders and educators had “wonderful opportunities” to address the most pressing problems of our age, but that “there is an extraordinary dearth of this kind of leadership and teaching.” This was one of his reasons for being hopeful: that so much could be so easily done that is not yet being done.

This is the same way I feel about the potential of school: there is so much of great power that we have not yet begun to try. Like Wilson, I agree that inquiry is the doorway to all of these possibilities.

Exploring Our Options
My eldest daughter Fiona came home a few weeks ago with a review packet for her semester exam in middle school English. The packet contained eight pages of multiple-choice questions about language usage and the writing process. The rich procedures of expert writing had been reduced into snippets of information for easy testing. These strategies had been removed from the writing situations in which they were meaningful and actually used. Even more distressing was that the strategies had been turned into ‘sound bytes’ that had been dumbed down so they in no way matched what real authors do when they write.

For example, one question asked: During the revision process you should . . . followed by four options. As an author of twelve books and over a hundred articles, none of the options made sense to me; none described what I do. The correct choice was d) you should separate ideas into single idea paragraphs.

I couldn’t keep from laughing out loud. Research on writing shows that there are many reasons for dividing writing into paragraphs. To indicate that a single idea or topic is being explored typifies less than a quarter of paragraphs in published writing. Plus, to equate revision, a process through which authors substantively change, add to, and rearrange their ideas with a relatively mundane housekeeping chore of paragraphing was beyond ludicrous to me. It violated the rules of real writing and promoted an idea only used in school.

This is what is happening in many American classrooms: we are teaching information – often erroneous or tentative – and ask for it to be repeated - regurgitated, if you will - in lieu of teaching students HOW to REVISE or HOW to DO MATH, to think like scientists, to write and read and converse using the strategies of real readers and writers for the exciting purposes of constructing and communicating new understandings.

In this book, I will propose a powerful alternative to information-driven teaching. I’ll describe how to do so through two sets of stories. The first stories are personal ones of how I have come to reframe all that I teach in inquiry contexts, and what my classroom research and experiences reveal about how and why this kind of method works. I’ll focus on the units I’ve referred to above, organized around the questions of ‘What makes a good relationship?’ ‘What are civil rights and how can we protect them?’ and ‘Who will survive?’ I’ll describe how students can be engaged by powerful ideas and learn new strategies of reading and writing in ways that are more accessible and that make more sense to them.
The second set of stories comes from my work with Tanya Baker as in-service directors of the professional development wing of a national demonstration site project in adolescent literacy across the curriculum. Our national demonstration work was centered in Washington County, Maine, but we now have dissemination sites across the country. In these sites, we ask teachers to bring in a unit of instruction that they already teach. Throughout a summer institute of 5-8 days, we work together on how to reframe these units around disciplinary questions. We then work on how to integrate strategy instruction within these units so that students can learn to pursue these questions like real practitioners do. We engage in follow-up sessions throughout the next school year as we assist teachers to implement their inquiry units and the embedded strategy instruction. We help teachers set up in-school structures like peer coaching and teacher research/reflection groups so that they can inquire into and reflect upon their teaching. In this way the teachers assist each other to continuously develop their teaching long after we are gone. In this book, I’ll share units and stories from various teachers with whom we’ve worked throughout this exciting project.

{Interactive Learning/Thought Box about here}

Think of the most recent text you have read.

Why did you read this text? Did you choose it freely or was it assigned?

What did you already know about the topic of the text?

Did you already have an interest in the topic?

Were you able to ‘use’ what you learned by thinking with it, arguing with it, talking about it, or applying it in some way?

When I give this quiz to middle schoolers they almost always reply that they have read an assigned text and that they knew very little if anything about the topic, had no interest in it, and saw little use for what they “learned” before, during or after the reading.

In contrast, when I survey adults, nearly 90% say they read something they freely chose, and nearly 100% say it was of interest to them, that they already knew something about the topic and that they saw an immediate use for the information in their daily thinking or work. Those who were assigned texts to read were part of a book club or a graduate course in which they were
willing participants. There were clear, immediate satisfactions and uses to be fulfilled through the reading.

If we want to make school reading more like reading in the world, then we need to consider how readings are situated in student interests, needs, and their opportunities to engage with and use what they learn.

CALLOUT Understanding and participating in any discipline, and in democracy itself, depends upon engagement with the written word. - Neil Postman

Becoming Part of the Conversation

Various studies of student reading and writing show that students do not feel competent as readers and writers nor do they feel that school develops competence (see, e.g. Smith and Wilhelm, 2002). Applebee, Burroughs, and Stevens (2000) offer an explanation of why this might be so: schools typically give assignments to read and write without assisting students to know how to do so, or they focus on personal responses instead of explicitly teaching students HOW to make meaning more like an expert does through the use of various tools.

According to Haskell’s review of 90 years of research on the subject (2001), students rarely learn anything in school that they are able translate and take forward into their lives. He argues that for students to “transfer” what they learn to new situations (i.e. for learning to be said to have occurred), they need 1) to understand basic principles and procedures for addressing the particular task, 2) be assisted to make connections from how they are addressing the task now to how they can complete similar tasks in their future, and 3) to get plenty of practice and feedback around the requisite skills of task completion.

There are requisite stances and strategies used by expert readers, writers and problem-solvers. There are typical ways of reflecting and applying what we know, of using questions and of talking through issues and problem-solving processes that kids must learn. Some of these tools are general and apply across situations. Many are specific to particular kinds of texts. All of them must be explicitly taught and learned.

It is the project of this book to show how tools of inquiry, questioning and discussion can be taught, learned and used to promote powerful student learning, reading and writing across the
curriculum. That’s because these techniques are essential to student participation in curriculum as a conversation, a relatively new idea promoted by many researchers and commentators (see Applebee, 1996).

In other words, curriculum - which is everything we do with students – should be organized as a dialogue about important disciplinary issues, concepts, and ways of ‘doing’ a subject – just as Edward Wilson suggests. This search for complex understanding must be promoted instead of ‘playing it safe’ and engaging in fake conversations devoted to articulating one pre-ordained answer, which is what research shows almost always happens in school (Marshall, 1987; Marshall, Smagorinsky and Smith, 1995). Questioning, inquiry and true dialogue involving multiple perspectives are all essential to this quest.

John Goodlad and his colleagues (2004) likewise argue that education should be about helping students to enter into the ‘human conversation’. He means that school should be about preparing students to participate in and make their own contributions to democratic society, and to particular cultures of work and play they will choose to enter. Playing ‘guess what the teacher already knows’ will not address this goal.

Take, for example, my unit on civil rights. If I teach To Kill a Mockingbird or Roll of Thunder, Hear my Cry or Number the Stars as a text, or as a medium to teach particular reading strategies, I will fail to promote student participation in a cultural conversation. But if I teach the unit as a way of addressing the question of civil rights, where they come from, what threatens them, how to promote and protect them, how to balance the rights of particular groups with the rights of other groups and individuals, then my students become part of a ‘human conversation’ that is ongoing. This conversation is of great importance and is pursued every day in our newspapers, courts, schools and classrooms. I will still be teaching the content of the texts, and strategies necessary to reading them, but I will do so for the immediate purpose of engaging in a conversation that affects all of us. This changes our relationship to the text and other curricular materials. The text now has immediate personal and social meanings, and functional value. We are now learning strategies and ideas to help us converse with each other and with sociologists and legislators and citizens about the issue of civil rights, a conversation we will likely continue to engage in throughout the whole of our lives.

How do students learn?
The idea that all disciplines (content areas) are based on conversation comes from socio-cultural psychology and learning theory. These researchers are therefore leading the educational conversation about inquiry, questioning and talk. Researchers such as Jerome Bruner and Barbara Rogoff are prominent leaders of this movement. These folks argue that learning occurs within the interactions (the conversations and joint activity) between people who create and use different kinds of knowledge. Socio-cultural theorists identify disciplines (or ‘professional work cultures’) as ‘conversations’ organized around particular questions, issues and problems. A group of experts (whether roofers, sociologists, legislators, biologists, health care workers, plumbers, mathematicians, or historians) use these ‘conversations’ to develop and share new ideas and particular ways of creating knowledge useful for addressing the issues they face (like ‘when should we install a metal roof instead of using shingles?’ or ‘what are civil rights and how do we protect them?’). These conversations create knowledge and are oriented around a problem that occurs in a particular situation of interest to the community. Socio-culturalists maintain that the situation in which one learns ‘co-produces’ knowledge. The learning process is therefore one of ‘situated cognition’. Learners learn when they interact with experts as they engage in the activities of the discipline.

For example, when I learned to kayak I read several books and watched kayakers ply their craft on the river near my home. But I did this knowing that I would soon be kayaking on the river, and my real learning began when I got on the water. The river was the situation that really taught me how to paddle. The context on the water immediately communicated to me when I had done something wrong (because I would be upside down!) and when things had gone well. With the help of other kayakers, I could make adaptations to my technique and would immediately see what happened. Likewise, though I read two books about shingling roofs when my own roof was leaky, I really learned how to shingle by climbing on the rooftop with my friend Gary, who lent me the tools and methods of roofing a house. If I had never climbed my ladder to the roof, then I would never have entered a situation that could teach me how to hang gutters, lay snap lines and shingles, and put up flashing.

Unfortunately, this powerful sociocultural theory of learning is not typically used to inform instruction in schools. What is known as the curriculum-centered approach (also known as the teacher-directed or information-transmission approach) currently dominates schools and is based on the idea that a teacher’s role is to purvey information to students.
Teachers teach the WHAT and teaching is equated with telling. One of the most distressing effects of the current mania for standardized testing is that it exacerbates the problems associated with this theory, reducing learning to the recitation of information and algorithms, and equates good teaching to the raising of student scores on standardized tests. In this model, teachers generally lecture and assign readings; students memorize information and take informational tests. (Imagine if I had tried to kayak or shingle my roof based only on information I had read, without assistance in the context.)

A more progressive alternative is known as the student-centered approach (or the natural learning or discovery approach). This model of teaching leads to teachers creating nurturing environments in which student learning is allowed to proceed ‘naturally’. Students choose their own topics and reading. Teachers help students to manage their own projects and agendas by making materials available. A focus is placed on the WHO, i.e. the learner and her current interests, needs and goals. (Imagine if I had kayaked down the river or roofed my house by just playing around and doing whatever felt right to me.)

The cognitive scientist Barbara Rogoff (Rogoff, Matusov, White, 1996) describes both of these theoretical orientations as “one-sided” because the focus is primarily on one side of a multifaceted learning situation: on the Content (WHAT) or the Learner (WHO). She argues that in situations in which rich learning takes place, there is a multi-sidedness that highlights the collaborative interactions and relationships between the Teacher and Students, and the Students and the Content. This focus includes a consideration of the WHAT (the content to be learned), the multiple WHOs (I may sound like Dr. Seuss, but I mean here the teacher and the learners, their prior knowledge and abilities), the HOW (the expert procedures and strategies we must know to operate on and use the content) the WHY and WHEN (the purpose, situational contexts and uses of the knowledge that is being constructed through the various learning interactions).

The boys in my recent study of males and literacy (Smith and Wilhelm, 2002) possessed an implicit understanding of these curricular models and had a lot to say about them.

In the curriculum-centered model, you “do someone else’s work” (the teacher’s/school’s/curriculum’s work) and “play guess what the teacher already knows”.

In the student-centered model, you do your own work, “and nobody really helps you.”

In the socio-cultural learning-centered model you do the culture’s and community’s work, which – if you and your teacher are participants in a “community of practice” – can also
be your own work, that of the teacher, and that of the discipline. Thus your own work becomes part of a larger project in the real world. It becomes a work project that has meaning to you and usefulness in the world. (For more detailed accounts of these three theories, see Wilhelm, Baker and Dube, 2001; also Wilhelm, 2001, 2002, 2004)

This “socio-cultural model” highlights the collaboration of teachers and learners as purposeful inquirers into content and into problem-solving learning processes.

[Box]

Cambourne (2002) summarizes the essential core assumptions of the socio-cultural / socio-constructivist model as including the following facets:

1. learning occurs in a context and cannot be separated from or achieved apart from a meaningful context where the learning is developed and applied.
2. The learner’s background, current understandings, immediate purposes and goals are central to what is learned
3. Knowledge is constructed socially through interaction that includes questioning, negotiation, dialogue, evaluation and ultimately, transformation of understanding and participation of the learner from that of a more novice practitioner to a more expert one.

[End Box]

When I ask students to help me pursue a question like ‘Who will survive?’ I collaborate with them to begin to think like informed readers, ecologists, environmentalists and mathematicians, who read to understand the similarities and differences between species, ideas like symbiosis and interdependence, and how living things relate to their environments. We might begin to think about rates of decay and how to use statistics to make predictions.

When we work with teachers in our national demo sites we collaborate with them to develop appropriate teaching strategies in the context of their own instruction and classroom situation. Both provide examples of ‘situated cognition’.

I am passionate about this kind of teaching for many reasons. The research base in cognition is compelling in its accumulated detail about this model’s power and usefulness. This model endorses the professionalization of teachers as those with profound understandings of how to create learning environments and apprentice learners into communities of practice – instead of
delivery people for pre-ordained sets of facts – a role that could clearly be undertaken by people without professional training and knowledge of teaching or even through a technological device like a website. This kind of teaching focuses learning on what students need to know and be able to do outside of the school walls, as they do the work of a mathematician, scientist or writer to solve problems and create knowledge in a particular community of practice.

[Wendy, following is a section where I try to consolidate all the “jargon” – terms and therefore intellectual tools that we use to think and talk about classroom questions and talk – I am wondering whether this could go as a 2/4 page spread glossary about here. Another option would be to call out these terms where they are first used. I suppose the whole section could be cut but I think we would lose A LOT. Michael and Tanya think it is important to keep. WITHOUT this kind of stuff the book becomes a bunch of tips instead of something of substance and longevity. If we cut I’ll have to change most of the commentary later in the book. I think it is worth the four pages – some folks will skip it, but no big deal . . . they will probably return to it later]

Some important terms for our conversation

I want for my books to be part of the worldwide conversation about teaching literacy. In this book, I’m hoping to introduce you to a specific ongoing conversation about how people learn through inquiry, questioning and talk. To enter into this conversation, there are a few important terms that are helpful to understand.

Two important ideas that can help us think about good classroom questioning, talk and learning are the concept of a “discourse community” and a closely aligned idea of a “community of practice.” In such communities, people use literacy and other cognitive tools to accomplish shared goals. The closer we align our classroom work with such communities, or the closer we come to making our classroom such a community, the more powerfully such work will translate to the world outside of school.

CALLOUT “A community is any place where habits of mind and thought are developed.” – Neil Postman, linguist and educator
“Discourse”, simply put, is a way of using language, talking, believing, interacting, valuing, and behaving. Assuming and using a discourse means assuming an identity (Gee, 1996). One’s “primary discourse” is acquired largely unconsciously through one’s social interactions with family and friends. “Secondary discourses” are learned as we begin to interact with other communities who may have different values and beliefs, or who are organized to accomplish different kinds of work. The further a “secondary” discourse is from the primary discourse of our home, the harder this discourse will be to learn. This was famously established by Shirley Brice Heath’s (1983) research. She found that the closer the home discourse was to school discourse, the more successful those children would be in school. Some primary discourse communities do not value “schoolspeak”; students from these communities will have more difficulty with school. In fact, doing school is sometimes in contrast to the values of home culture, which can cause children discomfort and difficulty unless it is clearly understood how they are operating in a different discourse community for particular purposes.

Cognitive scientists identify a discourse community as any group of people who share terminology, language, and purposes for using language. A teacher, for example, will use different language and vocabulary when on the playground discussing child development with other parents, when discussing dividends with her financial planner, when talking with other teachers in an IEP. Basketball players, physicians, electricians, motorcyclists, and bridge players all have their own “discourses”. To become basketball player or electrician I must learn their language and the tools they use to do work (which allows me to participate in the community of practice).

It helps to cultivate an explicit awareness of sameness and difference between primary and secondary discourses, e.g. how root words often indicate similar meanings across languages, but at other times words look the same but have different meanings. Understanding phonological (e.g. Spanish has the letter z, but no /z/ sound) and syntactic similarities and differences help kids learn the secondary discourse by using what they know of the primary one (Meeks and Austin, 2003). Understanding that scientists ask particular questions and use various tools and terms to address certain kinds of problems help students learn how to think like scientists.

Readers must use their available discourse resources to construct meanings from text. Language and strategies are stored in the brain as situated experiences - not as static schemata
that are applied mindlessly, but as dynamic heuristics, a kind of videotaped image we can edit and transform as needed (Gee, 1996). These experiences are the resources we must use to learn new discourses and construct new understandings. *It is a tenet of socio-cultural psychology that all learning proceeds from the known to the new, that we must use the past to move through present learning and into future applications.*

[Interactive Activity Box]

*Identify your primary “home” discourse. How would you label and describe it? In what situations has it helped make you an “insider” or an “outsider”?*

*Identify all the secondary discourse communities to which you belong.

_Could use CTC activity of the head – fill it in with what groups do you belong to and how does each group contribute to making you who you are?*

*Think of any time you entered into a conversation you didn’t know much about, or any time you were learning a new set of skills. How did learning the “discourse” help you to think and talk about the topic of the conversation about roofing, basketball, blood types, gender, etc.? How did learning the “discourse” help you to get new things done with other people, i.e. to enter into a discourse community? (Cf. Meeks and Austin, 2003)*

[End of box]

I think a lot about how I learned to whitewater kayak. First I watched people kayaking. I talked with kayakers who named the various ‘moves’ they had to make, and the various river features a kayaker has to notice and deal with. By learning this language of kayaking, I could then begin to think like a kayaker. I began to enter into the discourse of kayakers. When I began to kayak down rivers I entered the ‘community of practice’ – the club of boaters who kayak on whitewater. As I did so, I could talk with other kayakers and get feedback from them, which fed my continued expertise and improvement. Pretty soon other kayakers were helping me to do my roll, to get down a river drop, to ferry across the river. I understood what they meant when they said ‘paddle with your feet’ or ‘follow with your head’ or ‘boof off the rock’. Though I was still a novice, I could go down the river with people much more expert than me and learn from them.

The point is this: to do something new, we need to learn a new set of concepts and the terms that describe them. We also need to learn a new set of strategies for enacting our
knowledge to do work. The terms are **conceptual tools** that help us enter the conversation and learn from it, and that help us to identify, reflect on, share and transform our own learning. The strategies are known as **procedural tools**.

Socio-cultural researchers argue that our job as educators is to **apprentice** students into disciplinary conversations (i.e. to learn how to think and approach issues like a an expert reader, a sociologist, or with a mathematical turn of mind). To do so they must learn the basic concepts and problem-solving strategies of the discipline so that they can participate as a member of that community. In other words, they assemble a **toolbox** – sets of problem-solving procedures called **heuristics**. These problem-solving repertoires enable learners to inquire, question, talk, construct and apply understandings like real experts. When students can use cognitive tools to participate in some approximate way in the real meaning-making processes of the expert community, this is called **‘legitimate peripheral practice’** (Lave and Wenger, 199x).

*Socio-constructivists apply this rule of thumb: effective teaching and learning is that which moves students towards performing or ‘doing’ a subject more like experts in the real world - towards more legitimate and less peripheral practice.*

These are a few of the most important terms and concepts that will help us to ‘converse’ together about how to use questioning and discussion strategies to improve our students’ reading, writing and learning. We’ll revisit and elaborate on these ideas throughout the book.

[Thought Box]

Choose a lesson or activity that you use. Consider how it matches what real practitioners in the world actually do. In other words, how does it develop the actual tools, ways of thinking and talking that experts use. I call this **“the real reader test”**, or the real writer test, real scientist test, real mathematician test, etc. If your activity does match or directly lead to what real experts do, then your activity is “toolish”. Conveying information to students is “schoolish”; if we assist the students to use concepts and strategies – to think, argue and problem-solve with them, then the information goes from being inert to becoming a cognitive tool.

[end thought box]

Picking a Bone
Reviews of teaching in American schools show that we primarily teach by lecturing, assigning textbook readings, and generally purveying sets of information. (Hillocks 1999; Applebee, 19xx). By using information-driven approaches we fail to apprentice students into the thinking and knowledge of “communities of practice” – actual communities in the world who use math and science, language and literature, history and philosophy to solve problems and do real work.

It is my contention in this book that we must focus on teaching students HOW to read, write, converse, problem-solve, and think like “novice experts. If we do not, they will not learn how to really understand and use knowledge in the conventional and specialized ways that experts use them. What is at stake is beyond words: the ability of our students to think, and to become democratic workers, citizens and meaning-makers, to be full participants in creating knowledge, solving problems, and improving our world.

My wife Peggy, a music education professor, uses this analogy: would we prepare musicians to play in a concert solely- or even primarily - by lecturing them on music theory? I might ask if we would prepare students to play basketball by having them memorize rules and take a paper and pencil test and never letting them run plays and do lay-ups? I’ve likewise heard Lucy Calkins ask if we believe that we can teach people how to cook by serving them five course meals.

There is an old adage that if you give a hungry person a fish you feed him for a day; but if you teach that person to fish, you feed him for a lifetime. The way most classrooms work, with what I might call an “information donation” lecture and worksheet mentality, shows we must implicitly believe we can feed people for a lifetime by giving them a fish (even though current research in literacy and cognitive science shows that nothing could be further from the truth). Either that, or we do not recognize typical classroom practices for what they are, nor recognize their effects.

As a result, I’ve got a big bone to pick with this book, namely this: information-driven teaching can always be reframed as inquiry. Anything we already do in school can be done in ways that fit what cognitive science says will lead to more powerful and transferable learning. In this book, I will describe how this can be done on both a unit level and through your daily activities and interactions with students.
Teaching Strategies in Context

In my previous writings, I’ve proposed that the socio-cultural teaching/learning process can be understood as a series of interactions during which the teacher works with students to learn new strategies by modeling (Teacher Does/Students Watch), and then collaborating with students to use strategies, gradually releasing responsibility to them (Teacher Does/Students Help and Students Do Together/Teachers Helps) until they can independently use the strategy (Student Does/Teacher Assesses).

Through our national demonstration site work, we’ve come to realize how important it is to emphasize that strategies need to be taught in the context of meeting a larger purpose. Although all of the strategy work I’ve done over the past decade has been situated in inquiry, I haven’t explicitly explored this in my books. Now we’ve come to realize that this larger frame of inquiry, of doing all these steps within a larger purpose shared by the teacher and students, is perhaps more important than the steps themselves.

CALLOUT: The students cannot follow where you do not lead

Therefore, I’d propose the following model:

* **Negotiate an inquiry: an essential question or problem-orientation to be explored together.** (Teacher and Students set a Purpose and Context for the learning)
* Introduce and explain a new strategy as needed to read a text/pursue the inquiry (Teacher Does/Students Watch)
* Demonstrate and Share Strategy Use- in the context of the textual work being used to pursue the inquiry (Teacher Does/Students Watch)
* Collaboratively Guide Strategy Use with texts appropriate to the inquiry (Teacher Does/Students Help)
* Give Opportunities for Collaborative Use of the strategy with appropriate texts (Students Do Together/Teacher Helps)
* Provide Opportunities for Independent Use of the strategy as students pursue inquiry activities on their own (Students Do Alone/Teacher Assesses – helps as necessary)
* Reflect Together (Teacher and Students name what has been learned; when to use a strategy, how to use it, what can be learned and achieved by using it, set goals for when to use it in the future, identifying how the strategy assisted in comprehending the text and pursuing the inquiry.)
CALLOUT  I realize that I have to become a ‘supermodel’ to teach because I have to model everything I want the students to do. But I’m pumped because I’ve learned the tools for modeling and assisting students to do the work!” -Tim Perkins, national demo site participant

If I teach symbolism by identifying symbols for students, or by lecturing and asking them to memorize terms, then I am working in an information-driven model. But if I assist them, while reading *Number the Stars*, to identify and interpret the multiple symbols and *how they contribute to the author’s commentary on civil rights and how they can be protected*, then I have done something quite different: I am apprenticing them into expert reading, and into understanding symbols like expert readers, politicians or artists are able to do.

To do this, I will have to introduce the notion of symbolism (a symbol reverberates with meaning beyond the literal – a flag is not just a piece of fabric – it signifies national pride and values, freedom, etc.) and how one can recognize a symbol (for example, it may be repeated or described in detail, or be an object or event provided at the beginning of a chapter). I need to model for students how I recognize and interpret symbols in our reading (There are many flags and banners described in the introduction to the last chapter. How do I know that this is a reassertion of Danish freedom and national pride?). I then have them help me identify and interpret other symbols (How do we know that the yellow dress is symbolic? How do the details of the dress reflect its meaning?).

Once we know the tip-offs for recognizing symbols and procedures for interpreting them, students can usefully work together to do so and I can help as needed. Finally they will be able to internalize the strategies for reading symbols like an expert, and do so on their own. Transferable learning will have been achieved.

Though I am very fond of the “strategy movement” in reading and am indeed part of this movement, I have two major critiques of it. My first major concern is that strategies are often taught separately from their larger use to create global meanings and to converse in larger disciplinary or human conversations. In other words, strategies are often taught as useful in and of themselves, or as a way to comprehend a particular passage or text. They are rarely tied to the notion of disciplinary inquiry. This limits the usefulness and transfer of the strategy.
Teachers who don’t understand the theory behind teaching strategy use won’t teach strategies in ways that will help students to use them.

My second critique is that almost all strategy instruction focuses on “general processes of reading” (strategies like activating prior knowledge, predicting, summarizing, etc.) which are essential to all reading. Particular strategies (like reading symbolism, or reading arguments or classifications) that are important to particular texts and disciplinary conversations are rarely discussed. General processes are necessary but insufficient to full comprehension of the texts students read as they go through school. Some general processes, like questioning, have many variations depending on the textual conventions (e.g. symbolism) or text types (e.g. satire, lyric poetry, argument) that students are asked to read.

In this book, I will explore how teaching students particular strategies of inquiry, questioning and classroom talk will address these concerns.

At the micro-level of this book (my little but important bones) I argue that all reading and writing in every subject area should be taught as forms of inquiry. To do this we must make questioning and true meaning-making conversation the heart of our classroom work. At the macro-level (my big bone) I argue that all curriculum needs to be reframed as inquiry.

I propose “Inquiry” as a socio-cultural curriculum model which provides a way to meet all the core requirements: to create a meaningful context, to set individual and shared purposes, to build on students’ existing resources, and to construct new understandings and abilities together through dialogue with authors, their texts, other perspectives, expert practitioners, and each other. When we inquire, we must learn how to question texts, data, authors and other students. We must learn how to converse and learn from the conversation.

The main gist of this book will be how to use inquiry, questioning and student discussion and sharing as powerful ways to support reading, writing, and content-area learning. Throughout, I regard reading and all forms of composing (including questioning, discussion, response, and writing) as thinking and problem-solving processes – as forms of inquiry, best taught as inquiry, and best learned in contexts of inquiry.

The inquiry approach has several powerful advantages; we will be unable to conceive of curriculum as simply purveying information, though students will certainly learn content and rich foundational concepts. We will have to teach students HOW to learn. What we do in
school will then mirror the rich kinds of meaning-making that experts actually pursue in communities of practice. And the amazing thing is: you can still cover – or should I say “uncover” - everything that is required in the curriculum and by your school or state – but you will do so while helping students to discover enduring disciplinary understandings and while preparing them to think, read, write and solve future problems on their own.

[Book Preview]
This book is designed and organized to
1. show why it is important and powerful to organize curriculum as inquiry
2. show you how to organize curriculum (including your existing curricular units) as inquiry by asking essential questions, identifying central concepts and strategies necessary to addressing the question, and planning your instruction backwards from these goals
3. help you learn how to organize individual lessons in reading, writing, and class discussion as inquiry through the use of questioning and discussion techniques
4. demonstrate how to give students the questioning, discussion and learning strategies to independently comprehend, and to ask and pursue their own questions
5. show how to assist students to represent and share their own understandings– just as real practitioners do in communities of practice.
6. explore how the best teaching is itself inquiry: of asking our own questions about teaching, and learning from our own students how best to teach them

[End preview]

Doing Science

A few years ago, I had the opportunity to teach sixth grade science. In a unit on the atom, I remember teaching the students that the “neutrino” had no weight. That “fact” was explicitly stated in the textbook.

This past Spring I read in the magazine Science that researchers had now determined the exact weight of the neutrino. New methods and measuring technologies had allowed them to ascertain this new scientific finding.
I’m going to guarantee you something: they are wrong. In a few years, measuring devices and data collection techniques will have continued to improve and we will find out that the neutrino weighs something else again.

That’s because all “facts” are “social constructions”. In other words, facts are interpretive agreements posited among experts based on available data. Available data is in turn based on available methods and devices for collecting, analyzing and interpreting data, which are constantly evolving. As new data become available, our understandings about the world evolve.

[CALL OUT: There are no facts, only interpretations. –Friedrich Nietszche]

This is truer now than ever before, as available information – by some estimates – is doubling every 6-8 months. As Seymour Papert argues (1998), in a world where available information is constantly doubling and changing, the only thing worth knowing is “knowing how to learn.”

Many- if not most - “facts” and theories are highly contested and debated as the data do not provide enough consistent information to achieve agreement. Researchers “theorize” and argue for their positions based on the limited or conflicted data that is available.

The Science article highlighted to me what had been wrong about much of how I had taught science (and other subjects throughout my career). I taught it as a series of facts, a set of information, instead of a set of repertoires and processes and principles about how to perceive and understand the world. I indoctrinated the kids with information which is transitory and constantly evolving, instead of inducting them as apprentices into a discourse community of scientists by providing them with the lenses, language, ideas, and problem-solving techniques that scientists use to construct understandings and new knowledge.

[CALL OUT: Do not think for a moment that you know the real atom. The atom is an idea, a theory, a hypothesis, a human construction. It is whatever you need to account for the facts of experience. As our ideas about the atom have changed in the past, so will they continue to change in the future. An idea in science, remember, lasts only as long as it is useful. –Alfred Romer]
When we did do labs, I often told the students what they were going to learn. Then they did the experiment and “dry-labbed” it, i.e. cheated so that their results would match what I told them they should be. This is backwards science – the exact opposite of what scientists really do. If anything, I was powerfully teaching the kids how NOT to do science.

[CALL OUT: The scientific mind does not so much provide the right answers as ask the right questions. Claude Levi-Strauss]

But imagine if I had organized my teaching around a question like “What IS the atom and how does it help us understand how the world works?” Then I would have had to teach my students to understand atoms and atomic structure in the way scientists do – as a tentative and explanatory theory. I would have taught them how scientists came to their current understanding of the atom, what tools and ideas they used, and how these understandings will evolve with new tools and understandings. We would have focused on how atomic theory is used – how it matters to the ways we think and do science. They would begin to understand the ‘story’ of how science gets done. In other words, simply asking the inquiry question would have moved my instruction from telling students information to helping them understand how to ‘do’ science as a ‘novice expert’ in the scientific community of practice. This is the goal we will pursue in this book. This is the goal we will be helped to meet by learning how to use various strategies of questioning and classroom conversation in our teaching.