

Chapter Eight

“My inquiry skills shot through the roof!”

Kerry Faber’s sixth grade classroom in Edmonton (Ekota School) is set up in a U—shaped configuration with an open area right in the middle.

It is in this magical square that so many adventuresome learning experiences have taken place over the years:

Exploring the continent of Antarctica

Constructing an Aboriginal village

Recreating a fur trading fort

Building a medieval castle

And Re-constructing, perhaps for the first time in Canada! a replica of Leonardo da Vinci’s ideal city.

This is not your normal classroom, because Kerry Faber is an extraordinary educator who always challenges her students to exceed their own high expectations, to become the developers of their own learning and understanding through a wide variety of projects like those listed above.

After a one day visit to Ekota, the father of one of her students, Shannon, told me that being in such a project-oriented classroom has made all the difference for his daughter. Prior to working with Kerry in a more traditional setting, Shannon had been a somewhat listless student,

Since Shannon began working with Mrs. Faber, she has blossomed academically. It has been amazing to watch Shannon complete her assignments and projects. While she will still come to us with some questions, most of the time she is able to complete her assignments by

finding the proper information on her own and the quality of her work has increased dramatically.

As Shannon's ability to complete her assignments has improved, her comprehension of the material has increased. This also helps Shannon create better and more complete study notes for exams which translates into better grades. Shannon is also much more confident in school. . .

What this letter and the list of very challenging projects does not reflect is the primary role of inquiry within Kerry's classroom. She has used, and provided the model for, several of the inquiry strategies mentioned in this book and others (See *Why Are School Buses Always Yellow?*) and has formatted the Evidence of Inquiry form introduced in Chapter Six (Fig 6.4).

Now, how did Sydney come to reflect on a unit called Evidence and Investigation by concluding, "My inquiry skills shot through the roof?"

This unit involved solving a mystery that Kerry set up right in that magical square.

There was a body outline and various pieces of evidence scattered around it. I revealed this scene when I pulled back a blanket that had been covering it before science class. I posed this question: "What do you think happened here and what observations of evidence lead you to think this?" Then I used this scene to teach them how to conduct different tests. About once a week we would discuss our hypotheses as to what likely happened based on new information gathered from the tests. Children were encouraged to build on the ideas of others as well as question and debate ideas shared. People sometimes commented on walking by our room and seeing us engaged in some very active discussions while sitting around the scene on the floor. I would sit with the kids and facilitate the discussion – paraphrasing and guiding through questioning. The kids often went back to their desks afterwards and did some reflective writing based on these discussions. (email, March, 2010)

So students had to examine the scene, the available clues and with the help of additional lessons on finger printing, chromatography and graphology create a logical scenario to explain what had occurred. They were, in effect, playing the roles of

detectives and investigators like those seen on tv shows like NCIS, Law & Order and Cold Case.

Kerry used the Evidence form to help her assess students' levels of inquiry at the beginning of the unit and throughout. I have copies of all of these forms, commenced in early November, 2009. Here are some of their initial wonderings:

Jessica: What tools would you use [to solve the mystery]?

Max: What is the crime? Who are the suspects?

Sarah: When did this crime happen?

Danielle: What facts should one have to be a suspect?

Initially, we can see some students focusing upon gathering information about the alleged crime scene: time, kinds of evidence available, suspects.

But some students asked questions at a more *general* or higher level (perhaps Level II of the 3 Story Intellect, see Fig. 2.2):

Carter: Why are some crimes left unsolved?

Reid: What is the most common thing found at a crime scene?

Jessica: How would you prove if your suspect was guilty?

Interestingly, a number of students in Kerry's class wondered about our inability to solve a crime as Carter did. This speculation runs counter to our experiences with television programs where all of the crimes are solved within 60 minutes or less.

Kerry noted (in a recent email): "We actually discussed this a few times. The kids understood that much of what was on those shows was not real or even accurate. They suggested reasons for why the crime had to be solved in one episode."

These students, like the adults who examine sea shells and reflect on their own thinking, often begin at the most logical level—Gathering information. We can see these young sleuths, asking lots of What, Where, Who and How questions in order to learn as much as they can before they begin hypothesizing about suspects and possible motives.

Here Level I questions are most appropriate. Kerry noted: “I want the kids to know that this level of questioning definitely has its place in our inquiry process. These are the questions that we build on.”

How to account for the more *general* questions—What if a crime isn’t solved? What are elements common to all crime scenes? I’d bet these reflect the strong emphasis in this class on inquiry across the board, in all subjects. Some students, obviously, are able to abstract from the crime scene details, questions of a more general nature.

Growth in Quality of Questions

Now, how did students and teacher observe growth of students’ inquiry skills? Let me share with you the reflections of only a representative sample of Kerry’s students to exemplify their observed growth.

Here is Carter’s summary at the end of the unit:

I think I have grown during this unit. I have learned to ask questions more in depth. . . At first I was asking questions like, “Who is lying on the ground?” By the end I asked questions more in depth like “Did the fibre on the ground come from a jacket or was a blanket unraveling? Did someone put it there on purpose?” I have enjoyed this unit.

Rebecca Lee noted, “[This unit on investigations] got my brain really working. It got me asking process to apply questions.” (See 3 Story Intellect Fig. 2.2)

Kerry further noted that Rebecca “is reflecting more on what an activity taught her than recording just the details and procedures. She is thinking about the application of her knowledge in other situations.” In other words, Rebecca is becoming more complex in her thinking, growing from noting details to how they might, in general, be applied elsewhere.

And about Jessica’s thinking and questioning, Kerry noted,

“Questions are becoming deeper, more complex. Showing processing of experiments conducted [for example], “I wonder if you took a piece of someone’s hair and analyzed it but it didn’t show the DNA? . . . and “What if it was fake hair like a wig?”

Here Jessica is comfortable with entertaining outcomes contrary to those desired—not finding any DNA. As we shall note below, this question suggests an ability to see multiple sides of an issue, an indicator of cognitive development beyond a focus upon the more immediate and the concrete.

We can see that Carter has moved from a simple “Who’s that?” kind of question to searching for causes, for alternative sources of clues—from a jacket or a blanket. He’s grown, perhaps, from focusing on what’s before him to considering alternative sources of

information. As we shall see, searching for alternative possibilities can be a sign of growth in cognitive complexity as well as good problem-solving tendencies.

So, we have students who represent growth from Level I (Gathering) to Level II (Processing) kinds of questions. Of course, we would need to check their thinking within other units to see if they exhibit the same facility for asking “deeper, more complex” questions. Have these skills been transferred, for example, to literature and math or Social Studies? Kerry advises me that she does, indeed, have corroborating evidence from other units in Social Studies, Language Arts and Math.

Cognitive Development

One of my surprises in examining the data from Kerry Faber’s class was the evidence that suggested growth in cognitive development. This means that some students seemed to reflect growth from a comfort primarily with data—“just the facts, ma’am”—as Sergeant Joe Friday used to say on “Dragnet,” a show from the early days of black and white television.

As Kerry noted about one student, she “likes to work with facts and record details.” This focus on what Piaget called the “Concrete” is, of course, important. Concrete Operations characterize young children’s reasoning during the early years of elementary school.

But investigators need to do something with these facts, to sort them, relate them in order to find patterns and search for solutions to the puzzle. At about the age of Kerry’s students, eleven and twelve, some students grow into a more mature way of

thinking known as Formal Operations, where we can think more abstractly, consider multiple possibilities not immediately evident in the immediate data or evidence.

We can look at a body lying on the ground and think of many possible causes that led to this situation; we can imagine a variety of suspects with different motivations and formulate an explanation that considers all factors and not only those immediately evident to sight, sound and touch.

“Formal Operations” has always suggested to me the ability to transcend the concrete to imagine the impossible, the contrary to reality, the myriad possibilities that come from a lively imagination. “What if?” is a question I often hear on Law & Order, when the detective is asking about something directly contradicted by the evidence before him or her. Sort of like Copernicus’ asking “What if the *sun* is the center of the solar system and not the *earth*?” a question that defies the evidence of our immediate perceptions of the sun’s “rising” and “setting” daily.

Let’s see how this growth may be in evidence in Kerry’s classroom. I say “may be,” because I am keenly aware that we are dealing with a limited set of data within two separate classrooms over a two year period, but with the same inquiry-oriented teacher. I think it’s worth using these samples to key our thinking toward the intellectual development which she is definitely working to foster.

About Shannon, Kerry wrote that she “is developing in her ability to process information based on hands on activities and pose questions. These are mostly ‘What if’ and not related to the purpose of the activity. Looking at a situation from a different perspective and using a wider variety of questions will be a good goal to work on.”

The ability to take a different point of view is one important element within cognitive growth. In the last chapter we noticed how Jennifer's questions seemed to develop in this fashion from October to May of her year in kindergarten.

Here I think Kerry is urging Shannon to broaden the scope of her investigations with her "What if?" questions, to see the situation from multiple perspectives, definitely a characteristic of more formal, abstract thinking. Shannon did ask many "What if?" questions, for example, "What if two different inks show the same color?" This suggests she's able to see the possibility, however remote and removed from immediate experience, that there's the possibility of this happening.

Not knowing the exact answer

By contrast, another student, Chintan, "didn't like not knowing the 'exact answer', but now [two months later] he likes to share his perspective and listen to others to consider a situation from different angles." Here is quite direct evidence of change over time spurred on by the critical thinking Chintan has been challenged to engage in during this unit on investigations.

Kerry noted, "When Chintan listens to others' ideas he often challenges them to prove their reasoning by asking them questions like, "How do you know that?" or "Are you sure that's really the way it is?" to "What background information do you have to prove that?" He'll also comment that, "Maybe it's actually ... instead of what you are thinking...."

Box Insert: Fig 8.1

Iroquois Consensus Decision Making

For this project, you will imagine that you are a member of an Iroquois clan in the 1600s that is facing a number of problems. Your clan must come to a consensus about how to address these problems, and explain why you made your decisions.

Each member of your group will need to choose a role to play in your clan, and will bring an important point of view to the consensus decision-making process. As a clan, you will work together to create a poster that you will present to the Grand Council that describes and defends your decisions.

It is very important that every single member of your clan agree to each of your four solutions to the problems you are facing. Ever since the Peacemaker introduced the Great Law of Peace, the Iroquois have only made decisions that every representative in the Grand Council agreed upon, and you will need to use this model to make choices in this project. True consensus is built through talking, listening, and considering different ideas until a common understanding is reached.

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Box Insert: Fig. 8.2

Problem 1: Land Dispute

The crops of the neighbouring Snipe Clan from the Cayuga Nation have slowly been creeping onto the edge of your clan's farmland. Recently, they have been harvesting crops from this part of your farmland. This means that your clan has less food to harvest. Many clan members are worried that the clan will run out of food in the winter if the Snipe Clan is not stopped from using your fertile land.

- Some members of your clan think that the best response to this problem would be to start stealing mature crops from the Snipe Clan's land to make up for the lost food. They argue that this solution is only fair.
- Other people feel that your clan should simply move their farmland to a different area away from the Snipe Clan. They point out that the farmland will be come unfertile in a few years anyway, and are afraid to challenge the Snipe Clan, which is powerful and can be violent.
- Another group in your clan wants to send the Snipe Clan a wampum belt to declare war on the Snipe Clan. They think that the actions of the Snipe Clan must be confronted directly and forcefully.

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During this year's (2011) unit on the Iroquois consensus approach to decision making, students worked through problematic situations. (See Fig 8.1) I interviewed several of the students on Skype shortly after this enriching experience. It was evident from students' comments that they were good at projecting consequences:

“Wait, does that [approach] make sense!”

Is that realistic?”

Kerry noted the differences she's seen between some of these students' behaviors between fifth and sixth grades: "Last year you would have said, 'That's *dumb!*' But this year you ask questions" to get people to think of the consequences, for example, of mounting a raid on another group of Iroquois and stealing their grain.

"Why ask question?" Kerry asked her students during this video interview:

Mann: "You can get the person to be more curious. And you become more independent yourself. You learn more by thinking of questions and considering others' ideas."

Obviously, one goal for Kerry during this simulation was for students to consider all points of view before making a decision, not to get stuck in what we call their own "confirmation bias," finding and using only evidence that confirms their own points of view.

But, on the other side of the coin, Ayan wrote in one of her summary reflection entries on the Evidence of Inquiry Form: "The consensus model sounds nice but I don't think everybody could get along in one." To which Kerry responded in writing, "You are taking a more realistic approach than some of your classmates." Ayan was one who often raised questions when somebody proposed a solution "that [she] didn't think was entirely workable."

Seeking other evidence of cognitive growth

Now, here we're dealing with only a few students. But my purpose is to illustrate the kind of data that might become evident once we begin examining students' use of inquiry within a structured framework.

What other evidence might we seek? We might look for students' engaging in the following:

1. Considering multiple motives to explain perpetrators' actions. This would involve considering their lives, the multiple factors of their relationships with the victim.
2. Searching for more clues than are immediately evident as has done (see above).
3. The ability to create an explanatory framework/explanation that takes all clues into account, especially clues not immediately evident as well as motives not immediately evident. Such a framework, or scenario, will explain the facts, but might also, like a good scientific theory, predict where we might find more conclusive evidence.
4. The ability to project consequences of actions into the future, and, perhaps, the distant future.
5. Comfort with drawing key abstract concepts from an investigation, such as "freedom," "responsibility," "civil rights" and the like.
6. Dealing with "If . . . then . . ." propositions that are by nature abstract: "If all criminals make mistakes, and this person is our leading suspect, then we should be able to find him/her having made a serious mistake somewhere along the line." You've no doubt heard this reasoning on Law & Order, or CSI at one time or another. Kerry advised me "The kids will often ask questions framed like this but they often don't have the background knowledge to process the question to a logical conclusion or the perseverance to investigate on their own."

There are no doubt other indicators. Consider how we use our imaginations, to create fantasy friends the way many children do. At a more advanced age, we should be able to reason in the world of fantasy, perhaps the way a James Cameron did in creating his block-buster movie "Avatar." Seeing what's possible in the future and being able to construct characters that act out of recognizable human motivations.

Box Insert:

How does a teacher foster good problem solving?

Kerry Faber: “I left the problem solving to the kids. . . I got better at keeping my mouth shut, just asking them how they were thinking things through. . . They feel so empowered. I’m having a great time watching them. . .”

End Box Insert**Fostering Problem Solving Skills**

It is evident by now that some of Kerry’s students are thinking like good problem solvers—identifying the crime, seeking causes, motivations and considering a wide range of alternative solutions or explanations.

Considering alternative points of view and perspectives is not only a sign of cognitive growth, it is also an indication of good problem solving skills. Maybe your colleague sees the situation differently. Maybe she can imagine how one or two as yet unnamed persons might be suspects.

Jack Bauer, the fictional hero of “24,” a very intense, well-plotted national security drama, was often thinking one or two steps ahead of the alleged terrorists as well as those in command of CTU. Good problem solvers imagine alternative perpetrators, motives, means and causal factors not evident to others.

Of course, the essence of being a good problem solver is to generate a solution that actually solves a problem. So often we hear in the national press about legislation

(currently about the banking situation, for example) that “doesn’t deal with the real issues leading to the 2008 near disaster.”

Part of being a good problem solver is to identify the problem correctly. This entails asking lots of question to get to the core or the heart of the matter. Of course, with a dead body in front of you, the problem is rather plain—who did it? But with complex social, psychological and economic/political situations—like health care—getting to the heart of the matter is often very, very complex requiring the skills Chintan has exhibited above.

Recall what Carter said about his problem solving abilities in this crime scene investigation:

I think I have grown during this unit. I have learned to ask questions more in depth. . . At first I was asking questions like, “Who is lying on the ground?” By the end I asked questions more in depth like “Did the fibre on the ground come from a jacket or was a blanket unraveling? Did someone put it there on purpose?” I have enjoyed this unit.

What do you see here that relates to problem solving?

Perhaps it’s Carter’s initial problem definition: “Who’s this lying on the ground?” a logical initial information gathering (Level I) question.

What do his higher, Level II questions contribute to his being a good problem solver?

What does it say about his concern for evidence, something every good crime stopper should pay meticulous attention to? Remember Sherlock Holmes’ legendary ability to spot evidence on somebody’s clothing with an initial glance.

Kerry’s comment on Carter’s self-reflection will lead us into considering critical thinking:

“Carter’s strength with inquiry is in his ability to listen to what has been said and think critically about it. He will rephrase, make analogies and ask further probing questions. He has strong background knowledge to draw from to make comparisons.”

Box Insert:

How do we foster making good choices?

KF: “One of the reasons I use the non-directive approach is to give some choice back to the student. If I just direct, they are expected to do what they are told. They don't have to think for themselves or decide what choice they could make - of perhaps a variety when faced with an open ended question (What could you choose to be doing right now with this time you have?). I usually add "What APPROPRIATE thing could you choose to do...?" This also makes them think of what is socially or academically acceptable. This is after they have been prepped on what choices they could possibly make.”

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Development of Critical Thinking

Related to becoming better questioners and developing a more mature style of thinking (formal operations), we can expect in a unit like this that students would claim that they’ve become better “critical thinkers.” And, indeed, they did.

For example, Sarah said at the end of the unit, “I think I have grown in my critical thinking a lot because of all this. We had to use it throughout the whole unit.”

Aaron concluded, “I think I have grown my critical thinking skills a lot because I’ve been asking great questions and my inquiry skills have gone up, up, up!”

Shannon reflected, “I think I have improved in critical thinking because of being able to be a forensic scientist and do many hands on activities. . .We got to do online finger printing and I found out how to do teeth impressions.”

When I visited this classroom in February, 2010, I spent some time listening to students tell me all about their investigations and how they solved the mystery. I also challenged them to define for me what they meant by “critical thinking” as they had been practicing it.

We all agreed that what they had been doing was gathering evidence, analyzing it and using it to draw reasonable conclusions about what had happened in the problematic scenario. They had learned a lot about finger printing, chromatography and other related processes we can see weekly on CSI.

Here are some of the examples I’ve selected to illustrate students’ growth in their ability to think logically, using available evidence, toward a reasoned conclusion:

“[Sarah] is able to give proof behind some of her logical reasoning, but it needs to be more detailed. Sarah states `You can get a better mental picture of what happened (when critically thinking)”

Jessica wrote: “I think I have become a much better critical thinker during this [crime scene] unit. We have done many tests. I think the most important skill an investigator needs is to have critical thinking [like doing various tests]. . .When you’re an investigator you can’t just use one piece of evidence to know who the suspect is. You have to find many.”

Marilee noted about her own thinking, “I think I have grown because when we first started the unit I was very excited. I didn’t know how to use my background knowledge. [Later, this] background knowledge helped me make better inferences and it helped me ask better questions.” Kerry noted that Marilee “is trying to show her own reasoning, but is sometimes challenged to demonstrate it in a thoroughly logical manner.

She is unable to clearly write her ideas because she hasn't thought everything through carefully. She often won't persevere with her ideas to complete a logical conclusion. She is still at the stage in which she needs me to encourage her and ask questions to guide her through the process. Sometimes I have to make suggestions to keep this process going. It often has to do with level of maturity and confidence."

Also consider what Kerry means by "a thoroughly logical manner." When we deal with evidence, we should be asking these kinds of questions:

1. Is it relevant and related to the scenario at hand? When we find a corpse with a knife through his chest slumped over his own desk, it may or may not be relevant that there is a set of golf clubs in the corner. It may or may not be relevant that there is a cup of half-consumed coffee on his desk or that the window was partly open.
2. Is it verifiable? Can everybody agree that there was that cup of coffee and that it, indeed, had the victim's prints on it as well as one other unidentified set?
3. How can all the relevant clues be related? Here's the challenge, of course, that calls for the creative mind to imagine a scenario that explains all the clues and points to a perpetrator. Agatha Christie was elegant in her ability to imagine explanations un-conceived by others involved in the case.

Marilee is also using a key critical thinking word, "inference." An inference is a conclusion we draw based upon relating different pieces of evidence. For example, consider this scenario, "John crossed the lake and tied up at the dock."

Now, how did John cross the lake?

We might initially conclude that John was in a boat. How? We use the clues "lake," "crossed" and "tied up." We relate them to our prior knowledge and realize we've done that before in a boat or, at least, seen films where this occurs.

But we could use the same context clues to logically arrive at a different mental picture to explain the little vignette:

John road in a seaplane, on a surfboard, or, James Bond-style, in a water-born automobile that has wheels as well as a propeller and rudder.

Creative thinking

We are creative when we are solving problems. This is how some psychologists define creativity. During the Apollo Thirteen mission, NASA had to become very creative in the uses of onboard equipment in order to keep astronaut Jim Lovell and his companions (Swigert and Haise) alive. You might remember that a crisis of survival was caused when one of the liquid oxygen tanks in the Service Model exploded, causing an aborted moon landing and the crew's having to move to the return module, Aquarius. You might also remember that dramatic scene when Ed Harris (Gene Kranz) comes into a room with a bunch of on-board equipment and declares, "Failure is not an option. We have to find a way to solve the problem [of too much build up of carbon dioxide] with this equipment."

It was the equivalent of trying to find a way to make a square peg fit into a round hole.

But they did it and, of course, the crew of Apollo Thirteen survived with some creative problem solving.

Creativity is what Kerry's students have been practicing when they:

1. Look at a situation from a new and different point of view.
2. Reframe the problem with a new question
3. Make analogies, metaphors and models
4. Think of alternative, unusual, novel solutions to the problem

Recall Chintan's challenging "others to consider a situation from different angles."

Recall what Kerry noted about Carter's thinking: "Carter's strength with inquiry is in his ability to listen to what has been said and think critically about it. He will rephrase, make analogies and ask further probing questions." Being able to see similarities enhances our ability to solve problem, because we can draw from one experience and apply it to another. Analogies lead to metaphor, one of the hallmarks of the creative mind: "If music be the food of love, play on."

Many problems can be successfully and creatively solved just by reframing the question we ask. For example, Years ago we would ask, "How do we stay away from the biting mosquitoes?"

Then somebody reframed the question to be "How do we keep the mosquitoes from biting us?" This question led to many varieties of bug spray that we use today.

Box Insert: Fig 8.3

One of Kerry Faber's challenges is to build a flying craft that can travel at least 3 meters in air.

Kanupriya's first attempts led to planes that did flips in mid-air, nose dives and landed belly-up. She modified the wings several times. Her patient reflections after so many failed trials also told her she needed was a new fuselage. At the dollar store she found a "foam sword" that had to be modified and that became her fuselage. Swords into fuselage. Creative thinking spurred by the questions, "What if?" and "Why not?" After further modifications, she produced this model that flew more than three meters and

landed body up! One of the characteristics of a good problem solver and creative thinker is persistence in pursuit of a goal. Kanupriya certainly exhibited this quality.

[Insert Kanupriya’s sketch here]

And she ended her lengthy journal reflections recording all of the four or five mis-trials and successful trial with these creative questions:

Will it be possible for “aeroplanes to run on water or hydrogen in the near future?”

In the future will it be possible for man to travel “faster than the speed of sound (mach 2, mach3). . .without spending much money?”

We’ll see Kanupriya. Good questions.

End Box Insert.

“My inquiry skills shot up through the roof!”

And now let’s return to Sydney—“My inquiry skills shot up through the roof!”

At the end of her Evidence of Inquiry form she wrote, “Inquiry is very important [because] I wouldn’t have been able to have an inference at the end, but to me this unit has been a wake-up call in the world of critical thinking and inquiry.”

I think Sydney is here using “inference” synonymously with conclusion, claim or judgment. We can infer that John crossed the lake in a boat, but with some critical questioning we can logically arrive at alternative and logical conclusions.

Why has it been a “wake-up call” for Sydney?

Perhaps she is referring to the solving of crimes. Critical thinking is the basis of our entire judicial system. We are all, if indicted, presumed to be “innocent until proven guilty” or until proved “guilty beyond a reasonable doubt.” This means that in a court of law the evidence must lead to the overwhelming conclusion that someone has, indeed, committed a deed or action that goes against the laws and customs of society.

Critical thinking is also concerned with having a healthy skepticism about what to believe and accept. I’m sure Kerry’s students raised many good questions about somebody’s tentative conclusion about guilt or involvement. These questions about what to believe are the heart of critical inquiry according to John McPeck: “Critical thinking involves a certain skepticism about what to believe or do. . .” Remember these same students’ questions in Chapter Six about “flying penguins.” Not real, they said emphatically.

Sydney might also be referring to another aspect of critical thinking: Considering evidence that contradicts our favored points of view, looking at the other side of the coin or issue. This isn’t easy because of our own preferences for our ways of thinking and believing. There are many kinds of bias—political bias where we favor one point of view over another; selection (or confirmation) bias where we choose only those samples/pieces of evidence that confirm our own point of view or to create a certain image or conclusion (as in propaganda).

I imagine on several occasions somebody raised a question that challenged the selection of evidence: “But what about this or that. You’re overlooking a key piece of evidence. . .” Kerry notes that during discussions she heard these comments: “Don’t

forget we learned or figured out (this piece of evidence) that doesn't fit with what you are saying." "That doesn't sound logical based on"

So, some of Kerry's students have excelled at drawing reasonable conclusions by bringing together evidence in a logical fashion. In her notes, she has indicated where there has been growth and where there needs to be more work: "Looking at a situation from a different perspective and using a wider variety of questions would be a goal to work on."

And about one student Kerry wrote that he "needed to be more thorough in clearly stating the proof to back up his choice of the culprit." We cannot make unfounded accusations and expect them to withstand the scrutiny of the kind of critical thought Kerry's students have been engaged in.

Improving the Depth and Quality of Our Understanding

One primary goal of conducting various inquiries and investigations is to come to deeper understanding about the subjects we are learning. In this unit, Kerry's students have certainly deepened their understandings of:

1. How to conduct a forensic (evidentiary) investigation
2. The nature and importance of critical inquiry and thinking
3. The importance of being keen observers and collectors of evidence and how to use it appropriately. For example, what if two pieces of evidence seem to cont I think I have grown during this unit. I have learned to ask questions more in depth. . . At first I was asking questions like, "Who is lying on the ground?" By the end I asked questions more in depth like "Did the fibre on the ground come from a jacket or was a blanket

unraveling? Did someone put it there on purpose?” I have enjoyed this unit.

Questions for Kerry Faber

What questions would you now like to ask Kerry Faber based on what you know of how she fosters inquiry? Send them to me and I'll forward them on:

jbarell@nyc.rr.com.

Conclusion

We can see from this albeit very limited sample that inquiring into complex situations like the one Kerry presented to her sixth grade students involves asking lots of questions, considering alternative points of view and drawing reasonable conclusions. As in life, not all students' final conclusions were the same. They saw the evidence and final inferences differently.

What I hope has become evident is that this kind of learning experience can provide a wealth of information about what we call 21st century skills—inquiry, problem solving, critical thinking and the dispositions that accompany them—openness, cooperation with others, risk taking and tolerance for ambiguity.

Again, let us review what can be done in all grades:

1. Challenge students with puzzles, mysteries, problems to solve that might involve extensive investigations, gathering of evidence to arrive at sound conclusions.
2. Provide them with a means similar to the Evidence of Inquiry Form or the Travel Journal (or Wikis, Google docs and the like)in which to record initial

questions, how they conducted their purposeful investigations, reflections on their own growth in inquiry, problem solving and critical thinking.

3. Give students feedback on their thinking as often as possible. These formative assessments, given early and often, will help them achieve unit goals.

4. Continuously model inquiry and how you wish students to apply it. This year Kerry told me that she was surprised and delighted to see something she's never noticed before, how students' had brought inquiry into their writing on the district writing exams. For example, one writing prompt concerned time: "Time is a peculiar thing. . .we cannot stop it. . .time changes things. . .there is nothing we can do about it."

But Rickey paused and asked this question, "But what if we could change that? What if a hundred years between one man's birth and a huge event in history didn't mean that that man would never see the event? What if a species dying out didn't mean that species would never walk the earth again?" Sounds like H.G. Wells or, more recently, of theories of time travel made perhaps possible by Einstein's theory of space time.

Postscript

One of the benefits of having students keep records of their thinking and, especially of their development over time is that we will continually be surprised by the conclusions they draw at the end of the year. The curriculum is not what's written down in a textbook, nor is it solely what we as teachers seek to enact in our classrooms. The "curriculum" is also comprised of those unintended learnings that students acquire while

being in our room, being with our classmates and working through what we, together, have worked on for these nine months.

I mentioned Shannon's dad at the beginning of this chapter. Come to find out her brother, Rickey, was in Kerry Faber's classroom this year as well. What he wrote at the end of his Evidence of Inquiry Form relating to the study of Iroquois consensus model and working through a simulation thereof bears sharing with you:

I think that using inquiry was a big help in understanding the Iroquois. It's just so much more efficient than staring blankly at a textbook and reading chapter after chapter of humourless, uninteresting and just plain lame text that is trying to convince you that this subject is interesting via the least interesting methods possible without defying some law of physics while you scream about how bland it is. . . The text method just pours some knowledge into your head and leaves you to forget it.

The inquiry method refuses to do that. It makes sure you think about the knowledge it gives you and makes things more entertaining for you. The text method's most entertaining activity is a worksheet with an animal picture in the corner. The inquiry method's most interesting activities are: [Here he lists several] Build Your Own Glider; Mock Legislature; Grand Council, Problem Solving, 20 Questions, Smart Board Games (all Iroquois); Creative Projects, Interesting Homework, Candles and Alka Seltzer, Reflection and Many More. . .”

Reference

Barell, J. (2007). *Why are school buses always yellow? Teaching inquiry preK-5*.

Thousand Oaks, CA: Corwin.

