

## CURRICULAR INQUIRY

### Health and Body Systems

—Mary Pfau, Dry Creek Elementary School, Centennial, Colorado

#### **Immerse: Engage Kids, Activate, and Build Background**

To get kids fired up about doing a small-group inquiry under the curricular umbrella of the human body, fifth-grade teacher Mary Pfau began the unit by bringing in newspaper and magazine articles with medical themes. For a couple of days, with the kids gathered around her, she simply read articles and guided a discussion about them, having kids turn and talk throughout the reading. The topics included AIDS in Africa, a Denver Bronco football player with a torn ACL, and the eradication of chicken pox. Mary hoped that sharing these authentic articles would make these health issues relevant and would reel the kids into the human body unit. Several days in, she modeled on the overhead projector how she took margin notes right on an article, jotting down her inner conversation as she read.

For homework, she asked kids to read and bring in an article that had a medical slant. Kids scoured newspapers and magazines both in school and out and shared articles about frostbite, the complexity of the brain, health benefits of chocolate—you name it. Mary copied three articles for the class and let each child choose one, read it, and take notes in the margins just as she had modeled. When they finished reading the article and jotting their thinking in the margins, she had them find someone in the room who read the same article and discuss it. This activity was essentially a mini-literature circle. Read an article, jot down your thinking, and talk to someone—exactly what adults do when reading to learn and research information. We call this process *read, write, and talk* (Harvey and Goudvis 2005), and it provides a terrific way for kids to interact with text and with each other every single day.

By midweek, kids began to view themselves as medically inclined. They began to think about their daily lives in medical terms. Case in point—one of the kids twisted a knee on the playground during lunch recess, hobbled in, and asked Mary if she knew the difference between pulling a muscle and tearing an ACL. After tending to his sore knee, Mary suggested he hop on the Internet and find out. Kids couldn't get enough of viruses, blood-borne diseases, muscle spasms, and of course, the routinely gross stuff like snot and farts. By week's end, a bunch of kids had decided that they wanted to be doctors, nurses, or EMTs. Recall for a moment your own fifth-grade human body unit—that laborious textbook chapter and one worksheet

after another asking you to label and correctly spell the body parts. By the end of the first week were you chomping at the bit to learn more? Not likely. It's a wonder we have any doctors at all in light of how deadly conventional schooling made medicine.

Mary's purpose during that first week was twofold: definitely to get kids pumped about the topic but also to build their background knowledge. This is part of the first immersion phase of curricular inquiry: build background so learners can connect new information to what they already know. Too often, we try to teach material that kids are not able to process because they do not have enough background knowledge to understand the concepts. But the previous week's extensive reading, writing, and talking about health issues had built Mary's kids' background knowledge—and they had a gazillion questions after that immersion in medical content. They were right where Mary wanted them, pumped to investigate more. When we make connections to new information, we understand it better and we ask more informed questions.

### **Form Inquiry Groups Based on Interest**

The fifth-grade human body curriculum called for kids to understand and describe the roles, functions, and interrelationships of the seven bodily systems: digestive, respiratory, circulatory, skeletal, muscular, nervous, and reproductive. The following week Mary handed out a survey and asked kids to indicate their system preference in order, jotting down on the form what they wanted to learn more about and what they wondered about. After collecting their surveys, Mary synthesized their interests and divided kids into four inquiry groups based on their preferences.

- *Muscular-skeletal system.* The surveys indicated that these kids were primarily interested in issues of health and fitness in relation to this system.
- *Circulatory system.* This group was curious about the heart, lungs, and blood diseases.
- *Nervous system.* This group coalesced around issues related to the brain and spinal cord.
- *The history of medicine.* This group was a bit of an outlier. Their surveys indicated they wanted to study epidemics and plagues in the Middle Ages. So Mary went with that, keeping in mind how she could nudge them to systemic considerations and contemporary illnesses as well.

Mary realized that these inquiry groups did not cover every bodily system the curriculum mandated. But she was undaunted—she would simply fill in the gaps and teach the other systems and their interrelationships throughout the study. She would teach with the big ideas in mind and stay focused on the overarching concepts of the roles, functions, and interrelationships of the seven bodily systems. And she would highlight when a student or group wrote or said something that related to these larger systemic concepts. Mary knew that these inquiries would not only engage the kids but would lead to more learning and understanding of the overarching body system concepts as well.

In addition, Mary recognized that this inquiry project was about more than learning content, although that was a very important goal. She would also model lessons and foster discussions on constructing guidelines for social interaction and on reading for information, taking notes, and doing research. From Mary’s perspective, the outcomes for kids included being more knowledgeable about bodily systems and their relationship to human health as well as being more capable, independent communicators and researchers.

## **Develop Group Ground Rules**

Once kids were assigned to groups, Mary had them come up with some social guidelines for group interaction. Students talked to one another and jotted down suggestions. Then they came together as a class, where they discussed and debated the guidelines, decided on some ground rules, and co-constructed an anchor chart with Mary. Mary posted the chart on the wall and they reviewed it each day before meeting in their small groups.

### **INQUIRY CIRCLE EXPECTATIONS**

1. *Be respectful, participate, and be prepared.*
2. *Be enthusiastic and motivated. You are learning and sharing new and fascinating information!*
3. *Positive, thoughtful workers attract others.*
4. *Actively participate in research, discussion, and listening.*
5. *Be a responsible group member.*
6. *Don’t “hog” the spotlight! Let everyone have chances to share.*
7. *Disagree agreeably.*
8. *Prepare! Read, think, and share.*

For her part, Mary organized the inquiry ahead of time by

- flooding the room with trade books on health and the human body
- continuing to gather medical articles that might be of interest to various groups
- searching the Internet for accessible health-related websites to recommend
- reviewing and then highlighting textbook pages that were accessible and helpful
- bringing in plastic models of the human skeleton, the circulatory system, and various organs, such as the heart, lungs, and brain.

### **Investigate: Read to Gather Information and Develop Questions**

The second phase of a curricular inquiry project involves helping kids choose their own inquiry question within the required topic, then read and do research to build knowledge and answer the question. Steph joined Mary at the beginning of this phase. As they talked together, Mary identified a problem. She explained that when the kids took notes, they wrote down way too much. Some simply copied what they found on the Internet or in books and articles, rather than synthesizing the information. And often those who did synthesize the information wrote too much that was unrelated to their question. They seemed to just take notes aimlessly without any direction. Together Steph and Mary decided to explicitly teach reading and researching with a question in mind.

Steph modeled with an article from the *Washington Post* titled “Why We’re Sicker.” She explained that she was going to annotate her thinking on the article as well as take notes on a two-column form headed Notes/Thinking. When she saw the title of the article, she had immediately wondered, *Why are we sicker than we used to be?* Steph explained that it seemed to her we should be healthier than we were in earlier times, because of the advances of modern medicine. So this really confused her, and she wondered how this was possible. She wrote her question on the top of the form and explained that she would read with that question in mind and try to jot only notes related to that question. In that way, her question would guide her note taking. The Notes column would represent the facts and information in the article that related to her question and the Thinking column would reflect her thoughts as she read.

This two-column Notes/Thinking form is one of our favorite ways to help kids narrow their focus as they take notes. It seems to scaffold them to screen out less-pertinent information. And we feel very strongly about the thinking side of the form. In conventional schooling, we only asked kids to write down the facts, ignoring the thinking behind their note taking. We now know that when they write down their thinking as they take notes, they are more likely to learn and remember the information.

As Steph read with her question in mind, she came to learn that modern life itself seems to be at the root of our increase in allergies and immune system disorders. Ironically, many researchers now believe that our obsession with keeping things clean has led to diminished immune systems that allow allergies and immune disorders to proliferate. After the lesson, Steph suggested that the kids go back to their groups and generate questions about their topic. She asked them to jot down their questions, read and research with that question in mind, and take notes on the Notes/Thinking form.

QUESTION	
Why are we sicker than we used to be?	
NOTES	THINKING
<ul style="list-style-type: none"> <li>▪ Allergies are on the rise in Europe and North America.</li> <li>▪ Hay fever, asthma, etc. are increasing in E &amp; NA.</li> <li>▪ Have not seen a significant increase in 3rd World countries.</li> <li>▪ Hasan Ashard, allergy expert says the rise in allergies is epidemic.</li> <li>▪ Modern living is how we live</li> </ul>	<ul style="list-style-type: none"> <li>▪ What exactly is “modern living?”</li> <li>▪ Everyone is constantly cleaning stuff.</li> <li>▪ Why are allergies increasing so much in US &amp; Europe.</li> <li>▪ Why not in Africa &amp; South America and parts of Asia?</li> <li>▪ My kids’ allergies are worse than mine. Wonder why?</li> <li>▪ Maybe that’s why my kids answered. Today allergies are worse.</li> <li>▪ We have caused people to be immune because we spray all that antibacterial stuff etc.</li> <li>▪ So it sounds like our obsession with keeping things clean may have lead to more sickness.</li> </ul>

Mary had surrounded each group with text sets related to the chosen bodily system. Steph and Mary moved about the room to observe the various groups. Steph stopped at the nervous system group first and listened as they pored over brain books and articles and had an energetic discussion about the brain. Katherine was recording all of the questions that came up in the group.

*The brain is still a mystery. Why is it so difficult to figure out how it works?*

*How does the brain make dreams and why?*

*What are migraines exactly?*

*Do kids struggle with migraines as much as adults?*

*What exactly is artificial intelligence?*

*How do computers and brains act differently?*

*Could a computer admire a painting?*

Quentin asked the last question and commented that in the movie *I Robot*, a computer chose to save the stronger man, and a human chose to save a child in need. So he felt that human judgment and empathy (his words, not ours!) were part of what differentiated computers from humans. Recognizing that these kids were soaring on their own, Steph moved on to the circulatory group. She noticed that it looked quite small, however. One of the group members, Kelly, told her that two of the boys were at the computer. Steph headed over to see what they were up to and, surprise of surprises, it had nothing to do with body systems, health, or even body parts! She stood quietly behind them as they engaged in a lively discussion of the previous night's NBA scores.

"So what are you guys up to?" Steph asked, as Dylan tried quickly to get off the website.

"Researching," Cody answered.

"What are you researching?" Steph asked. They looked at each other and neither could answer. "Okay, let's talk about what you are interested in," she suggested.

"Blood diseases!" Dylan answered as Cody nodded. "And the NBA," Steph added as they smiled sheepishly.

"We were actually wondering about something before we came over here, but the rest of the group wasn't interested," Dylan said.

"And what was that?" Steph asked.

"We saw this show on the Discovery Channel about malaria and we wondered why there is malaria in some places but not here," Dylan said.

“We had a lot of questions about malaria,” Cody said.

“Well, guess what, you can have your own small inquiry circle on malaria then. It fits really well under the circulatory system, because it is related to the blood, isn’t it?” Steph encouraged.

And so began Dylan and Cody’s investigation into malaria. This was a pretty small group of two, but we need to practice flexibility when engaging kids in small-group inquiry, because for kids to take their research seriously and work hard, they have to be interested in it. And the truth was, both of these boys were big jocks. Neither would choose school reading if they could throw a football or debate NBA statistics. But they seemed genuinely interested in malaria, which was half the battle.

And so they began reading with their question in mind. The more they read, the more they learned, and the more they wondered. One question led to another, and when they learned that malaria kills more than a million people a year, mostly women and children, they immediately wondered the most important question of all—what can we do to help? Lo and behold, that’s when I found them back at the NBA website, but this time legitimately! They had been directed there when they asked the action question—“What can we do about this?”

The NBA had partnered with an organization called Nothing But Nets, which has as its mission to cure malaria by getting bed nets to African families to protect them from infected mosquitoes. Serendipitously, at that site, they came upon an article by their very favorite writer in the world, Rick Reilly of *Sports Illustrated* fame. They devoured his essay, marked it up with their thinking, and ended up at the Nothing But Nets website, where they found an educational video about what to do to help out. For as little as ten dollars per person, they discovered that we can buy a bed net that protects one child for four years!

Knowledge is powerful. Cody and Dylan were now unstoppable. They knew the other kids in the class would not be able to resist once they saw the video and heard the pleas for help. Kids climbed aboard, shared the information with their families, and actively raised money for bed nets for families in Africa in an effort to stop the spread of malaria.

## **Coalesce and Take Learning Public**

Each of the four inquiry circles ultimately wrote a variety of feature articles about their findings. They used writing workshop time to craft them and Mary did minilessons on nonfiction feature article writing during this time. Finally, they decided to gather all of the articles together and publish a magazine focused on health and medical issues. They looked at professional

journals as models for their own publication. Cody and Dylan wrote an article about malaria—the causes, its effects, and what we can do about it. Others wrote about artificial intelligence, migraines in childhood, allergies, and other topics. The result was their own “Journal of Health and Wellness.” Several kids got the idea of distributing these journals to doctors’ offices for their waiting room reading! We love this. Nothing better than taking a school project and putting it to work in the real world.