At last Wilbur saw the creature that had spoken to him in such a kindly way. Stretched across the upper part of the doorway was a big spiderweb, and hanging from the top of the web, head down, was a large grey spider. She was about the size of a gumdrop. She had eight legs, and she was waving one of them at Wilbur in friendly greeting” (White 1980, p. 37).

While holding the newest member of our classroom, a tarantula, I asked my third-grade students to share what they knew about spiders. After all the “eewwss” and “ahhhs” subsided, I quickly realized that many of the students had misconceptions about spiders. For example, some students thought spiders would attack them, and other students thought all spider bites were deadly. Therefore, I knew it was important to allow students to observe real spiders over a period of time. Before introducing Charlotte’s Web (White 1980)—the much loved children’s story about a friendship between a pig and a spider—I told the students that they would become spider scientists. In addition to addressing philosophical topics such as, growing-up, death, and friendship; E. B. White’s book defines vocabulary words and incorporates scientific facts concerning arachnids. However, some of the spider information in the book is not accurate. Therefore, Charlotte’s Web can be used to teach students to become better informed readers.
Spider Stuff

For the spider exploration part of the lesson I purchased an orb weaver and a wolf spider from a science supply company, where I also purchased the tarantula. I chose these spiders because the orb weaver spins a web and the wolf spider does not. I placed the spiders in separate five gallon tanks, because watching one spider make a meal of the other was not part of my lesson plan! We named the spiders Charlotte (orb weaver) and Wilbur (wolf). Prior to introducing the students to the spiders, I asked them to answer the following questions in their science journals and draw a picture of a spider: (1) What do you know about spiders? and (2) What do you think you might observe the spiders doing?

All students thought they would see the spiders build webs. Most said that spiders bite. About half stated that the spider’s bite can kill humans. In the beginning, the drawings depicted spiders as circles with straight or curved lines coming out from their bodies. Over time, as students observed the spiders, the drawings began to show the spiders using their legs to catch or manipulate food.

After introducing the students to the spiders, I had a spider question session, in which students were asked what questions scientists would ask concerning their spiders and other spiders. This gave students specific goals as they gathered data (Figure 1).

Students observed the spiders every day for two weeks and recorded what they observed in their journals. The students drew a line down the middle of the page of their science journal and labeled one column “Orb Weaver Spider” and the other column “Wolf Spider” and recorded the date and time of each observation. I divided the students into three groups and alternated the times groups would observe the spiders so each group would observe the spiders at different times. For

Figure 1.

Spider questions and answers.

Do spiders kill people? (Some spiders make people sick if they bite them like the brown recluse [sic] or the black widow. My mom was bited [sic] by a spider.)

How are the spiders different? (The orb weaver’s web was bigger and pretty. The wolf spider’s web was small and harder to see. The orb weaver is pretty. The wolf spider looks scarier. It is brown. The orb weaver has longer legs than the wolf spider. The orb weaver makes a big web. The wolf spider makes a web like a tunnel under a rock. The orb weaver catches its prey in a web. The wolf spider comes out of its house and catches its prey when it walks by. The orb weaver puts its babies in a sack. The wolf spider carries its babies on its back. You can see orb weavers more during the day than wolf spiders.)

How are the spiders the same? (They both have eight legs. They both build webs. They are both animals. They are related to insects, but they are not insects. They both have eight eyes. They both eat insects. The orb weaver and the wolf spider can both be about two inches. They get to hold their food with their feet.)

How are spiders good for the environment? (Spiders in the garden will eat bugs so we do not have to spray the food with chemicals.)

How are you like the orb weaver and the wolf spider? (I have legs and eyes and I eat meat. I have a place to live. I breathe. I drink water. I like to run really fast like the wolf spider. My skin is like the color of the wolf spider. My arms and legs have joints.)

How are you different from the Orb Weaver and the Wolf Spider? (I do not have eight legs. I have two legs. I do not have eight eyes. I have two eyes. I do not kill bugs and eat them. I kill bugs because I don’t like them. I have skin and spiders do not. I am not black and yellow. I cannot make a web. I do not put my babies in a sack.)

Figure 2.

Fact page from student’s nonfiction Charlotte book.
example, group one observed the spiders in the morning, group two observed the spiders at lunch, and group three observed the spiders in the afternoon. The groups rotated their observation times every day. All of the groups fed the spiders and recorded the differences in how the spiders ate. The spiders were fed crickets from a local pet store. A small sponge was moistened and placed in a juice lid as the water source.

Students drew pictures of the spiders every day. Some students drew the habitat showing where the spider was located.

Books about spiders were available for students to read during their science block. The spider books included: *I Love Spiders* (Parker 2007), *The Best Book of BUGS* (Llewellyn 2005), *Spiders of North America* (Squire 2000), and *Spiders Are Not Insects* (Fowler 2002). These books provided students with information on anatomy, habitats, adaptations, and food getting. This allowed students to compare their observations of spiders with the scientific data published about spiders.

**Charlotte: The Orb Weaver Spider**

During the second week of spider observations, we began to read *Charlotte’s Web*. Before we began, I told students that the name of the spider in *Charlotte’s Web* was Charlotte A. Cavaticus. I asked them to look through the spider books and find the scientific name *Araneus cavaticus* and its corresponding common name: the orb weaver spider. Students realized that the orb weaver spider they had been observing was the same species as Charlotte.

I told students that they were now orb weaver spider scientists, and they were going to use their observations and new knowledge of spiders (from their journal notes as well as the spider books in the classroom) to verify the information about spiders in *Charlotte’s Web*. When students identified an orb weaver spider “fact” we wrote it on the board, and students determined whether or not the fact was true or false. For example, the first “fact” students identified was that Charlotte was able to speak. Students determined that spiders do not talk because they did not hear them during their observations, nor read any indication that spiders speak. The second “fact” students recognized was that spiders have eight legs. Students determined from their observations and reading that spiders have eight legs. When we finished reading *Charlotte’s Web*, students used their data from their observations and the “facts” from *Charlotte’s Web* to write fiction and nonfiction orb weaver spider books.

One fact was written on a page and the students illustrated the fact (Figure 2, p. 33). Students were provided pieces of construction paper and computer paper, cut into fourths, to make their books. The white paper was used for the pages of the books and the construction paper was used for the covers of the books. After students completed their books, they stapled the pages together.

**Vocabulary Web**

For every three to four chapters in the book, students created a Charlotte’s Vocabulary Web (seven times during the reading of the book [Figure 3]). This was an artistic display of the words we learned while reading *Charlotte’s Web*.

In advance, I had students create paper spiders. Prior to the activity, I cut the spiders’ legs and bodies out of black construction paper. It does not matter what sizes you use as long as you can fit all of the spiders on the “web” and an index card will fit on the abdomen section of each spider. The students glued the heads and legs onto the spider bodies and drew eyes on them with chalk.

I paired up the students and assigned each pair a vocabulary word. The students worked collaboratively to find the definition of the word either in the dictionary or on a dictionary website. Once students were able to explain the definition in their own words, they were instructed to write and illustrate the definition on an index card. After students completed the index card, they glued it to the spider, creating a vocabulary spider.

I hung a spider web (easy to find around Halloween) on the wall, on which students placed their vocabulary spiders (Figure 4). Each pair of students stood up, showed the class their spider, defined their word, and explained their illustration.
Assessment
In addition to assessing students’ understandings of the vocabulary words through testing and assessing students’ knowledge of spiders by evaluating their books, students kept journals. The journals allowed students to keep a personal record of their experiences and to reflect on what they learned about spiders.

The purpose of assessing the journals was not to assign a grade for each entry but to allow me to uncover students’ misconceptions and misunderstandings. By reviewing a few of the journals each day, I was able to identify and address topics that I may not have known were an issue. For example, one student said he had “hoppy” spiders in his basement. After speaking with his mother, we concluded they were actually camel crickets, which with their long legs have a spiderlike appearance. Moreover, informal science writing provided the students an opportunity to think for themselves as opposed to reproducing what they were told in class. Students were encouraged to read something from their journal to the class.

Reflection
In the future, I’d like to have students walk around the schoolyard and locate, identify, and map any spider webs and/or spiders they find in the schoolyard. If poisonous spiders are present in your area, instruct students to not handle any unidentified spiders. Students could look around the schoolyard at different times during the day and determine when they see the most spiders.

I noticed after the activities that students spoke of spiders with a more positive attitude. An improvement in students’ attitudes toward spiders may have been a side effect of the activities. A story I liked telling my fellow teachers was about a student who found a spider in the classroom. The student stopped class and asked if she could put the spider outside. She said, “This spider is hungry. He is just looking for something to eat. Can we please put him outside?” Wow, what a change in attitude. No more “ewwws”! My students enjoyed these activities, and I hope your students will too!

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Resources

Connecting to the Standards
This article relates to the following National Science Education Standards (NRC 1996):

Content Standards
Grades K–4
Standard C: Life Science
• The characteristics of organisms


Internet Resources
Poisonous Spiders
http://pma.sparks.org/spiders.htm