We often talk about the need to learn the process of science, rather than simply memorizing the things that science has discovered. In fact, “science literacy” is defined by most as a combined knowledge of process and information. Indeed, the national science education standards state that “A literate citizen should be able to evaluate the quality of scientific information on the basis of its source and the methods used to generate it.”

Evaluating the quality of scientific information is not easy, especially in areas in which the methods are complex. In my own field of psychology, most undergraduates are terrified of the core requirements for the major: intermediate statistics and research methods. These are notoriously difficult courses, but without them it is nearly impossible to evaluate the quality of any study in the field.

So if college students have a tough time understanding the scientific method or how to use knowledge of it to properly evaluate claims, how can we expect middle school students to learn this?

One solution is to teach the rather specific skill of skeptical thinking—separating science from pseudoscience. Because this approach is critical by nature, it promotes scientific thought in general. When we look for signs that something is pseudoscientific, we think about what methods would make it scientific. When we consider what questions need to be answered, we figure out how to answer them. For example, if someone claimed that studies showed that a bracelet had special powers to increase athletic ability, what would you want to know about how that study was conducted? The list (which might include how many people tested it, if all wore the bracelet, etc.) is one that tells you how to design a good study.

There are many colleges and universities with courses teaching about pseudoscience, but primary and secondary schools rarely have room in the curriculum. Supplementary programs are becoming more common and there are good indications that these programs are effective.

Physicsscientific? Pump Point Lesson Plan