EDThoughts: What We Know About Science Teaching and Learning was developed to “support standards-based reform of science education.” The approach involves addressing questions from the perspective of both research and best practice—for example, “What role does teacher questioning play in learning science?”—and speaks directly to teacher needs. The format lends itself to use in teacher study groups or as a resource for a faculty meeting focused on science instruction. Specifically, each of the questions is addressed in only two pages, with brief sections on “Research and Best Practice” and “Classroom Implications.”

As an example, one question asks, “What is curriculum coherence and articulation?” Although schools’ instructional programs are designed to meet state standards and district guidelines, many schools are realizing that discussing issues of coherence and articulation can help teachers develop better grade-to-grade understandings of the progression of scientific concepts being taught. Perhaps even more important, such discussions may help identify areas in which the science curriculum lacks coherence or articulation, and so needs attention at either the school or district level.

Krueger and Sutton define a coherent program as one in which:

ideas and skills connect and build on one another over time. This means that they are clearly described; they include some indication of the level of performance expected of the students; and they are connected in a logical progression. The connectedness and sound development of ideas and skills over the years of schooling in a coherent program is often compared to the progression of a good story. Students become aware of and understand the connections between ideas as the story develops over days, months, and years.

The authors then describe how a coherent, well-articulated curriculum program must:

- Focus on the important concepts and skills that are critical to the understanding of important phenomena and relationships that can be developed over several age levels;
- Help students develop an understanding of these concepts over several years in ways that are logical and that reflect intellectual readiness;
- Establish explicitly the connections among concepts and skills in ways that allow students to understand both ideas and the connections among them; and
- Assess and diagnose what students understand in order to determine the next steps in instruction.

Major topics in the book include: “Science for All” (equity issues); “Teaching Science;” “Assessment in Science;” “The Science Curriculum;” “Instructional Technology in Science;” and “Learning Science.” This last section addresses such questions as:

- What do we know about the way students learn science?
- What are the characteristics of effective homework in science?
- What can parents do to support science learning?

Although EDThoughts: What We Know About Science Teaching and Learning is an easy read, the issues addressed would support deep discussions with teachers about science instruction.