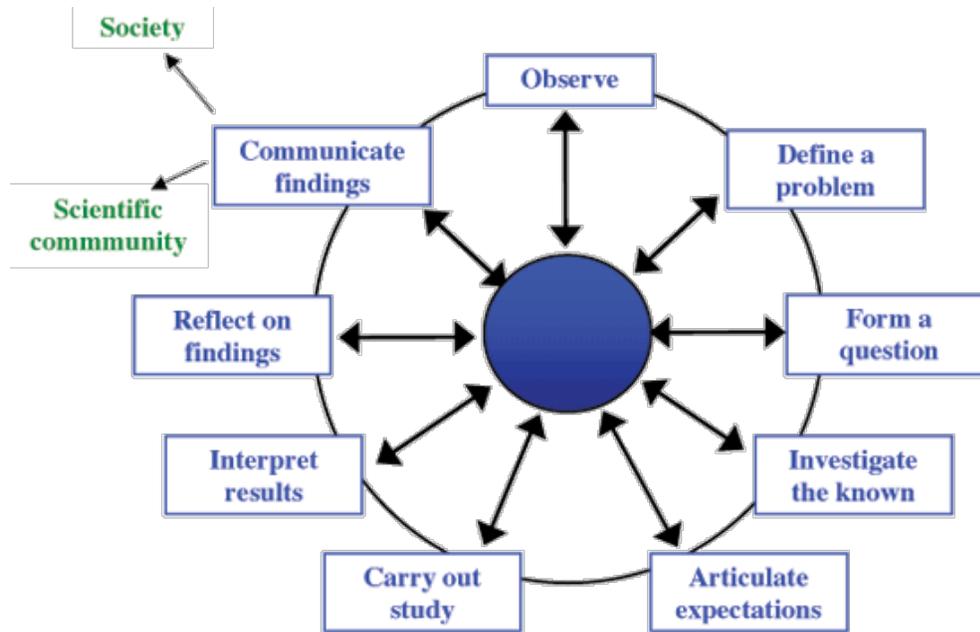


Science Inquiry & the 5 Es Learning Cycle

Very few textbooks today use a scientific inquiry approach to learning although this is the process we want to model if we want to “do” science like scientists. Scientists don’t follow one linear “scientific method” but rather ask many questions, make predictions, and set up experiments to help answer those questions. Through analysis of data, scientists draw conclusions and look for patterns. Those patterns usually lead to new scientific questions. The ways scientists approach a problem has been identified as an inquiry wheel:



Redrawn from “A Scientific Method Based on Research Scientists’ Conceptions of Scientific Inquiry,” R. Reiff, W. S. Harwood, T. Phillipson. Proceedings of the 2002 Annual International Conference of the Association for the Education of Teachers in Science.

In this lesson, you will learn a strategy for putting together a logical sequence of lessons for your students. You will go back and review a recent lesson from this course to identify its component pieces, and you will observe a video showing a similar process.

As you proceed through the lesson, keep the focusing question in mind:

? What are the 5 E’s and how can I use them to make a logical series of lessons to teach a **?**
science concept so that my students can learn

MATERIALS

[The 5E Learning Cycle \(PDF\)](#). Excerpt from *Teaching High School Science Through Inquiry*

[The Physics of Optics Video](#) (Annenberg/CPB)

PROCEDURE

- Think about what you know about scientific inquiry and the 5 E's.
- Think about your reflections on how you and your students learn best from Module 1. Summarize the kinds of things you generated on that list.
- Read *The 5E Learning Cycle excerpt (PDF)*. Think about what the teacher does on page 50.
- Go back to the Convection & Density Lesson (Module 5) and look over the various parts of the lesson. Identify which sections correspond to steps of the 5 E's learning cycle.
- Watch the first segment of the *Physics with Optics* video (0-15 minutes). How did the instructor engage the students? How does this apply to the 5E Learning Cycle?
- What kinds of lessons do you think are coming next? Watch the next part of the video (15-30 minutes). Describe ways in which the lesson sequence follows the 5Es.

ANALYSIS

- Compare the 5Es with the *Essential Features of Inquiry (PDF)* and the list *How do you and your students learn best?* How can the 5Es support inquiry learning in the classroom?
- Compare the lessons you saw in the *Physics with Optics* video with your own teaching. In what ways might you be able to alter your teaching to be more inquiry-oriented?

CONCLUSION

Use what you learned so far in this workshop to outline a 5E's learning cycle for a concept you teach to your students. Be sure to write the concept you are teaching first, then put the lessons in order.