

Teaching approaches for including nanotechnology and other current topics in the undergraduate curriculum: Context, inquiry and authentic science practice

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Topics in nanotechnology and nanoscience are unlikely to be found to any great extent in traditional instructional materials, including textbooks and laboratory manuals. While this may change in the future, it would be useful for today's undergraduate classroom to make use of teaching approaches that could be particularly appropriate for including nanotechnology and nanoscience into the curriculum. I will discuss three such approaches in this presentation. Context-based teaching is typified by the approach found in the textbook *Chemistry in Context* of the American Chemical Society. In this approach, an issues-based setting creates a "need to know" situation for teaching a particular topic. Inquiry-based learning has a variety of manifestations, but there are some fundamental characteristics that will be discussed which should be part of any inquiry approach. Finally, authentic science practice, in which students are involved in true research as part of their coursework, will be described as an approach that could lend itself well to nanotechnology education. Examples will be given of how authentic science practice is being used for other leading edge scientific topics.