

Summary of challenges and opportunities in teaching nanoscience.

The challenge...		provides the opportunity to...
1	You will not be able to know all the answers to student (and possibly your own) questions ahead of time.	<p>Model the process scientists use when confronted with new phenomena:</p> <ul style="list-style-type: none"> • Identify and isolate questions to answer • Work collectively to search for information using available resources (e.g., textbooks, scientific journals, online resources, scientist interviews) • Incorporate new information and revise previous understanding as necessary • Generate further questions for investigation
2	Traditional chemistry and physics concepts may not be applicable at the nanoscale level.	<p>Address the use of models and concepts as scientific tools for describing and predicting chemical behaviour:</p> <ul style="list-style-type: none"> • Identify simplifying assumptions of the model and situations for intended use • Discuss the advantages and limitations of using conceptual models in science • Integrate new concepts with previous understandings
3	Some questions may go beyond the boundary of our current understanding as a scientific community.	<p>Involve students in exploring the nature of knowing:</p> <ul style="list-style-type: none"> • How we know what we know • The limitations and uncertainties of scientific explanation • How science generates new information • How we use new information to change our understandings
4	Nanoscience is a multidisciplinary field and draws on multiple bodies of knowledge from chemistry, biology, and physics.	<p>Engage and value our student knowledge beyond the area of chemistry:</p> <ul style="list-style-type: none"> • Help students create new connections to their existing knowledge from other disciplines • Highlight the relationship of different kinds of individual contributions to our collective knowledge about science • Explore how different disciplines interact to explain real world phenomena

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