Case Based Learning in the Sciences

Resources:

- Sheridan Center website resources on case studies: http://brown.edu/about/administration/sheridan-center/teaching-learning/effective-classroom-practices/case-studies
- National Center for Case Study Teaching in Science, available: http://sciencecases.lib.buffalo.edu/cs/

The following has been adapted and modified from “What makes a good case? Some basic rules of good storytelling help teachers generate student excitement in the classroom” by Clyde Freeman Herreld (University of Massachusetts – Amherst)

A good case...

tells a story. It should have an interesting plot that engages the audience. It must have a beginning, a middle, and an end. The end may not exist yet; it may be developed by the students as the case unfolds and they gather evidence.

focuses on an interest-arousing issue. The case should start with a compelling scenario, or “hook”. The hook should be directly connected to the key issue or scientific process.

can be set in the past five years, or where appropriate, could be an important historical case. If the case is based on something currently being covered by the media, it is tangible and real. On the other hand, there may be occasions where it would be valuable for students to work through the process of solving a case based on a key discovery or paradigm shift in the field. In this situation, it should not be something that the students have already learned or reproduced in the laboratory, because it will lose its mystery and investigative value.

creates empathy or may touch on ethical or societal aspects related to the issue at hand. While not all cases may be based on individual characters, it is more engaging if students can develop a level of human connection to the story. This might influence the way a decision is made or a result is interpreted.

is relevant to the reader. Cases should be chosen that involve situations that students know or would be concerned about, or have relevance to someone in their lives. This improves the empathy factor and makes the case something worth studying.

must have pedagogic utility. What learning goals will the case facilitate? What is the point of the story in relation to the rest of the course and is there a better way to do it?

could be conflict provoking. Cases that revolve around a controversial issue could engage students in exploring the broader context of the science at hand. If appropriate, such opportunities enable students to articulate and debate different facets of a situation and its implications.

progressively leads to decision-making. Not all cases have to be dilemmas that need to be solved, but there is an urgency and a seriousness that is involved with such cases. In dilemma or decision cases, students cannot duck the issue, they must face problems head on. Without a dilemma, a student can sit back and passively observe a case unfolded. When they are forced to take a position, they are thrust into the action of the case.

has generality. What good is a case that is so specific that one can use it only as a curiosity? Cases must be of more use than a minor or local problem; they must have general applicability.

is short. It is simply a matter of attention. It is easier to hold someone's attention for brief moments than long ones. Cases must be long enough to introduce the facts of the case but not so long as to bore the reader or to make the analysis tedious. If one must introduce complexity, let it be done in stages. First, give some data and then a series of questions and perhaps a decision point before more information is introduced. After all, that is the way life plays out...little bits at a time.