

Dr. Wieman generously offered to provide feedback to questions that were not answered following his presentation. On reviewing the chat the following was sent to Dr. Wieman:

Remaining Question: What is the role of affect in your thinking on helping students learn to make scientific decisions? (a theme of several questions/comments).

Because of limitations on time, I did not discuss affect, but affect is quite important and is big part of what are in the boxes of “prior knowledge and experience” and “motivation”. It enters in multiple ways.

a. It starts with their epistemology. Understanding what they think it means to solve a science problem, and where that previous thinking (usually based on high school experiences) may be very different from what they are being given and expected to solve, explain quite explicitly and in detail why they are being taught this way, and why they are being given these kinds of problems to solve, and what is a good solution.

b. In terms of motivation, convincing students through activities, classroom culture, and feedback that they can master the material and how to master the material, and the instructor believes that they are all capable of mastering the material. Then also convincing them the material is interesting and worthwhile to learn. This usually involves thinking of a suitable context in which to present the material so they can see that the decisions have significance. The activities pass the test of “why would anyone but a science teacher care about this answer?”

c. Most of these choices about context and specific decisions are going to depend on a student’s background and life experiences, so those are relevant to consider when choosing context for decisions. What would be meaningful for them, either based on every day experiences or in future careers they may be considering?

d. Finally, giving learners some degree of control over the learning process is motivating, and so is good to think carefully as to how to cover the instructor’s objectives while giving students some amount of control. Projects are good in this respect, as they allow for a lot of student choice, but they may not always be suitable for covering the material needed, for example in a follow on course. So careful thought and how to structure are important.

Others asked for more information regarding the experiment comparing student learning and engagement in a course with traditional instruction and one taught with active learning strategies, described in the Deslauriers et al., 2011 paper. The reference for this paper is:

Deslauriers, L., Schelew, E., & Wieman, C. (2011). Improved learning in a large-enrollment physics class. *Science*, 332(6031), 862-864.