

INTERACTIVE LEARNING

There is considerable value to being an active/interactive learner, instead of a passive one.

During the act of learning, you can maximize the likelihood that you “get it” by **working** at understanding the material. **Do not be a passive consumer.** If you do not engage your desire to truly understand something in a manner that enables you to take your new understanding with you after the learning experience has passed, you will often find that, despite having felt comfortable following along with a presentation, afterwards when asked “how it was” you can provide a qualitative assessment (“it was great!”) but you cannot reproduce or explain the key points. Ultimately, if you have truly understood something and made it your own, you should be able to explain it to someone else.

Staying engaged in a presentation (or while reading) is greatly facilitated by actively questioning (to yourself) everything that is presented, to ensure that it rings true. The challenge is that this needs to be done “online”, without losing track of the presentation, which does not pause for your convenience (unless you or someone asks a question). Whenever you do not understand (or think that you do not understand) something, it is time to raise your hand and ask. **In Science, being inquisitive is encouraged, desired and appreciated.**

Do not worry about a question being too simple, too stupid, or something that you are certain only you do not understand. The goal of a presenter is for everyone to pay attention to and understand (and hopefully value) their presentation, so they will likely be gracious and appreciative of your question. The odds are also very low that you are really the only person in the audience who does not understand.

Below are some suggestions for optimizing your engagement in your own learning:

(1) **Actively want to understand** whatever it is you are hearing.

(2) **Be willing to multi-task: LISTEN** to what is being said, **THINK** about it for comprehension and **QUESTION** yourself about what is being said (Do you understand it? What are its implications?), all at the same time and without losing the thread of what is being said. If there are things that you do not understand but are not willing to ask, then write them down and find out about them later. Remember that when you lag behind in order to understand some point, you run the risk of being left far behind because the presentation continues forward.

(3) **Want to ask questions:** This is a key motivating point for ensuring that you are truly engaged in the presentation. At first, like many things, this process requires effort/practice. It is not simply an innate, “natural” skill that is bestowed upon a select few by their genetic and environmental fortunes. Some people certainly are more “naturally inquisitive”, but effort, focus and desire will also get the job done. Over time, it becomes easier. This is equally true for most things in life; you improve your performance by practice. The same point is just as pertinent to other so-called “survival skills” such as learning how to prepare and present a lecture or research seminar or learning how to write a manuscript or grant proposal.

(4) **Motivations for asking questions:**

(A) Ask questions about things to which you do not know the answer.

(B) Ask questions to which you may know the answer but which might be helpful to others in the audience (to help clarify a presentation).

(C) Ask questions as a significant courtesy to the speaker. Even when a speaker believes that they gave a good talk, if there are few or no questions then it suggests to the speaker that they did not really get across their message or its value. An audience should always play the role of host for a speaker or lecturer, and a

good host ensures that the guest (speaker) has a positive, memorable experience.

(D) Think about the questions asked by others in the audience, in case they spark a question for you.

(E) Asking questions is an outstanding means to stay involved in a presentation, even if (or particularly if) the topic is not intrinsically interesting to you.

(F) Asking questions requires that one pay careful attention to a presentation, in order to formulate reasonable questions.

(5) Developing the skill and comfort level to ask questions:

(A) Be patient, and work at it. Becoming comfortable with and proficient at asking questions is really a fair amount of effort, especially when one is still a student and so does not have the broader perspective and knowledge base that develops with time and experience. Just work at it, and don't expect the switch to immediately get stuck in the on position.

(B) Don't set the bar too high and try to make every question deep, provocative, insightful and so on. That kind of question will show up, often accidentally, but for starters feel free to shoot low and don't worry about questions being too simple. For example, do you really understand the methodology? Or, if you need a handy general purpose question should all else fail, there's always some version of "what are you going to do next?". This can be either a global type question at the end of a talk or a more specific question directed at a particular segment of a talk.

(6) Practice Sites: Lectures, lab meetings, journal clubs and other small venues are good practice sites. But don't shy away from asking questions at seminars.