

Questioning

What's in a question, you ask? Everything. It is a way of evoking stimulating response or stultifying inquiry. It is, in essence, the very core of teaching. —John Dewey (1933)

I. Questioning Techniques: When planning a lesson or interacting with a group, teachers carefully consider the purpose of the questions we intend to pose. Some questions will check for learning, while others will allow you to see if the students have mastered a concept. Try to think about the different types of questions you might incorporate in a lesson as you check for different levels of understanding. The following question types have been excerpted from Wong, H and Wong, R, *The First Days of School*. Harry K. Wong Publications, Inc. Mountain View, CA 1998.

Question Types

Check for...	Purpose	Example
Learning	The students show that information has been acquired by defining, identifying, recalling.	What is the formula we could use to calculate the force?
Comprehension	The students interpret, calculate, translate, explain, or summarize.	Give an example of Newton's 1 st Law. Using the formula you've learned, calculate the force required.
Mastery	The students apply the information learned, make inferences, and can also break down, reorganize, and evaluate.	Why do you think the cart accelerated? How would an engineer use the results from your lab to design a car? Write a test question on this topic.

II. Wait Time: Even if it seems like forever, waiting 30 seconds - 1 minute after asking a question is necessary. While you're waiting, rephrase the question or give small hints like saying the concept they should be thinking about. Usually, the same student (or students) will raise their hand. Don't call on them right away. Give students who are slower or shy time to think.

III. Dyad Dialogue: Sometimes only one or two students will raise their hand. This is when teachers use something called Dyad Dialogue. Have the students discuss the question with the person sitting next to them. This helps them see several things:

- if they understood the question
- if other students don't seem to know how to answer the question
- if they share the same answer
- if they disagree and so they can debate why their own answer is correct.

Now when you repeat your question, more students will be willing to answer. Give a time line: say, "1 minute to discuss." Circulate through the group so you can hear what they discuss. This helps to ensure they stay on the right topic.

IV. Student Questions: Students will ask *you* questions that fall into the same categories.

- Be sure to refer them to their notes, handouts, and the textbook for *learning* questions.
- Guide them to *comprehension* using Socratic methods. Ask them leading questions.
- Be ready to discuss when the students have demonstrated comprehension and are now ready to *master* a particular concept.