# Ensuring Students’ Prior Knowledge Helps (not hinders) Learning

When we endeavor to teach students something new, it is important that we first consider what students already know. Depending on several features of their prior knowledge, what they bring with them may either help or hinder their learning. Fortunately, there are several quick and straightforward ways that we can assess students’ prior knowledge so that we can be sure that we’re meeting students where they are, so we can maximize their learning.

For prior knowledge to *help* learning, it must be:

**ACTIVATED**: Even if students have the relevant prior knowledge, it doesn’t help them learn something new unless its activated, or brought back into their minds.

★ How can you activate prior knowledge? Try using exercises such as brainstorming or concept mapping, making explicit connections between new material and past course content, or using analogies that connect to students’ experiences.

**SUFFICIENT**: Sometimes students have some prior knowledge, leading us as instructors to assume that they are more prepared than they really are. Other times, they may have a different type of prior knowledge (e.g., declarative vs. procedural), rendering what they already know insufficient to be built upon.

★ How can you check if prior knowledge is sufficient? Try identifying what prior knowledge you expect students to have or remediating insufficiencies in prior knowledge (e.g., with an online review module, a review session from the TA, or checking in with instructors or prerequisite courses).

**APPROPRIATE**: Students may bring with them prior knowledge which is accurate, but which is not appropriate for the present context (e.g., assuming that the technical meaning of a word is the same as the everyday meaning of that word).

★ How can you check if prior knowledge is appropriate? Try giving a diagnostic assessment, using brainstorming to reveal what students already know, or looking for patterns of errors in student work.

**ACCURATE**: If students bring with them misconceptions which are inaccurate, they will have a much harder time making sense of the new information because it won’t fit with the concepts they think they know.

★ How can you check if prior knowledge is accurate? Try asking students to make and test predictions (this is a powerful way to help them overcome misconceptions) or having students justify their reasoning when answering questions.

**References and additional resources:**

★ The content of this teaching tip is based on the analysis of the research on prior knowledge from Ambrose, S. A., Lovett, M., Bridges, M. W., DiPietro, M., & Norman, M. K. (2010). *How learning works: Seven research-based principles for smart teaching*. San Francisco, CA: Jossey-Bass

Additional resources related to prior knowledge and how we might assess it include:

National Research Council ( 2000 ). [How people learn: Brain, mind, experience, and school](https://www.nap.edu/catalog/9853/how-people-learn-brain-mind-experience-and-school-expanded-edition). Washington, D.C.: National Academy Press.

Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers*. San Francisco: Jossey-Bass Publishers.

[Prior Knowledge as an Unexpected Obstacle to Learning](https://www.facultyfocus.com/articles/course-design-ideas/prior-knowledge-unexpected-obstacle-learning/) by Janet G. Hudson

[What Do Students Already Know](https://www.cte.cornell.edu/teaching-ideas/assessing-student-learning/what-do-students-already-know.html), from Cornell Center for Teaching Innovation

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