

The Past is Always With Us

Our brains are not built to remember unconnected facts; if material doesn't relate to something else that is important to us, we forget. Not only do we need prior experiences as an anchor, but the quality of our prior assumptions, conceptual knowledge and biases can all influence what we learn, for better or worse. If you'd like to experience the importance of prior knowledge firsthand, take a challenging class in a new area. Notice how much you try to use your prior knowledge to anchor new material and see how many misconceptions you have!

Despite these well known findings, most of us do little to discover what our students already know (or think they know) about our disciplines. And yet, that prior knowledge may make or break their chances for success in our classes.

In introductory courses we typically don't expect students to show a sophisticated grasp of disciplinary concepts. Unfortunately, we often find something more difficult to change: a mental framework that's a bit dented or missing critical pieces. Misconceptions and incorrect information can distort and limit student learning, especially at the introductory level. Unfortunately, since this incorrect information is also anchored in prior knowledge, it can be resistant to change. Discovering common student misconceptions and designing experiences that challenge them is a critical part of building new levels of expertise. Experiments, demonstrations, videos and other active methods that directly challenge student misconceptions are often the most powerful since they use multiple channels and can have more emotional impact than lecture or readings. It takes a powerful stimulus to dislodge embedded rust.

As students advance in the discipline, they begin to develop more sophisticated knowledge structures. In these upper level classes it's important to find out what students already know so that you don't try to build on knowledge that isn't there. Having a good understanding of prior knowledge can also help you advise students – someone with gaps that are just too large may need to take a pre-requisite course, while others may need to be referred for tutoring in specific areas. Other students may be able to skip some topics, or take a more in-depth approach.

There are many ways to assess prior learning. Some faculty members use pre-tests or writing assignments that identify strengths and weaknesses, but it does take time to read and analyze them, even when they are ungraded. Asking students to draw a concept map showing what they know on a given topic is a quick way to show you what students think is important and also gives you a picture of how they organize that information. Another approach is the Knowledge survey. This type of survey is often quite lengthy, but students are not actually asked to answer the questions as they would on an exam. Instead, they rate their level of knowledge of each concept or process on a three point scale from absolute certainty to complete ignorance. These surveys can be analyzed electronically and they provide a quick snapshot of the class that can help you focus your class time more productively. Administering the same survey or asking for the same concept map at the end of the course provides a check up on how effectively you were able to reach your goals; ideally you will see positive improvements for the class as a whole and for individual students as well.

Submitted by
Carolyn Oxenford
Director of the Center for Teaching Excellence
Marymount University
www.marymount.edu/facultyStaff/cte