Plan Questions to Uncover Misconceptions in the Asynchronous Material

Using questions to identify student misconceptions provides you with powerful teachable moments (Nilson & Goodson, 2018). Students often can't move forward on a problem or learn something new until they can specify what they don't know.

Reviewing student work in the asynchronous materials often helps instructors uncover potential misconceptions or gaps in the knowledge and/or skills you hoped they would gain in the unit or module. Design questions, based on your review, that will help to identify specific areas of confusion or misunderstanding. You may also consider misconceptions that are commonly encountered in your field and content and develop questions that will uncover whether your current students hold those misconceptions.

When developing questions you may use the Chart of Question Types by Cognitive Level on the next page to target the specific level of the unit or module learning outcomes.

Plan Questions to Address Challenging Concepts

The *curse of knowledge*, as described by Brown, Roediger, & McDaniel (2014), simply means experts, such as instructors, know so much about their topic that at times it is challenging to understand how or what might confuse a novice. Because of this, instructors tend to make assumptions about what students know, take shortcuts in offering explanations, and/or use jargon that is unfamiliar to students. At times faculty confidence in the content can cause students to feel as if they too understand a concept or idea. Students may also experience the "fluency illusion" during which they mistake fluency with a text or presentation with deeper understanding of the concept.

Asking carefully constructed questions can help you and your students determine if they have a deep or more surface-level understanding of the concepts being studied. You may start by asking questions that confirm that the unit or module concepts and ideas are challenging. For example, "*As you were reading the text, you may have been confused by the example on page 53. What may have caused that confusion?*"

You may want to use question stems from the comprehension level in the Chart of Question Types by Cognitive Level on the next page to help both you and your students understand the depth of their understanding.

Questions by Cognitive Level

In order to ensure your questions are scaffolded from lower to higher cognitive levels, it is useful to identify the level of each question or prompt you plan to ask. Use the following table, from Linda Nilson, to identify question types for each cognitive level.

Cognitive Level	Questions
Knowledge	• Who did_____to_____? • What did you notice about_____? • What do you recall about_____? • What does the term ____mean? • When did_____take place? Where did it take place? • How does the process work? (Describe it.)
Comprehension	• In your own words, what does the term_____mean? • How would you explain_____in nontechnical terms? • Can you show us what you mean? • What do you think the author/researcher is saying?
Application	• What would be an example of_____? • How would you solve this problem? • What approach would you use? • How would you apply ____in this situation?
Analysis	• How are_____and_____alike? How are they different? • How is_____related to_____? • What are the different parts of_____? • What type of_____is this? How would you classify it? • What evidence does the author/researcher offer? • How does the author/researcher structure the argument? • What assumptions are behind the argument? • What inferences can you draw about_____?
Synthesis	• What conclusions can you come to about_____? • What generalizations can you make about_____? • How would you design (structure, organize) a_____? • How would you adapt (change) the design (plan) for_____? • How can you resolve the differences (paradox, apparent conflict)? • What new model could accommodate these disparate findings?
Evaluation	• What would you choose, and why? • What are the relevant data, and why? • Why do you approve or disapprove? • Why do you think the conclusions are valid or invalid? • What is your position (opinion), and how can you justify it? • How would you rank (rate, prioritize) the_____? • How would you judge (evaluate) _____?

Sources

From *Teaching at Its Best: A Research-Based Resource for College Instructors* (3rd ed., p. 139), by L. B. Nilson, 2010, Jossey-Bass. Reproduced by permission.

Brown, P. C., Roediger, H. L., & McDaniel, M. A. (2014) *Make it stick: The science of successful learning.* Belknap Press.

Nilson, L. B., & Goodson, L. A. (2018). *Online teaching at its best: Merging instructional design with teaching and learning research.* Jossey-Bass.