

Research-based teaching tip

Targeted practice: A follow-up to Frequent Practice tip

Design practice activities at the highest cognitive levels, such as application, evaluation, and creation. Use high-level questions to assess student learning.

Rationale:

Student understanding of concepts is enhanced when in class practice activities focus on high level cognitive skills.

Evidence:

- Known as the “transfer-appropriate principle,” practice questions and activities must be similar to the questions and activities students are actually expected to perform on assessments in order for practice to be effective in learning outcomes.^{1,2}
- The emphasis placed on learning objectives and outcomes drives students motivations to learn material.³
- Students whose practice assessments focused on higher cognitive level questions and activities demonstrated an enhanced understanding of the material and performed better on both high and low cognitive level questions on a final assessment.⁴

Implementation:

Write practice activities, questions, and problems so that they are at a similar cognitive level as those on the final assessments, and focus on higher-order type questions and problems (application, evaluation, and creation based questions instead of recall based questions). Use these types of questions in class to give students frequent targeted practice to maximize learning outcomes.

Sources:

¹Morris DC, Bransford JD, Franks JJ. 1977. Levels of processing versus transfer appropriate processing. *Journal of Verbal Learning and Verbal Behavior* 16:519-533.

²Ericsson KA, Krampe R, Tesch-Romer C. 1993. The role of deliberate practice in the acquisition of expert performance. *Psychological Review* 100:363-406

³Wormald BW, Schoeman S, Somasunderam A, Penn M. 2009. Assessment drives learning: an unavoidable truth? *Anatomy Science Education* 2:199-204.

⁴Jensen JL, McDaniel MA, Woodard SM, Kummer TA. 2014. Teaching to the test...or testing to teach: exams requiring higher order thinking skills encourage greater conceptual understanding. *Educational Psychology Review* 26:307-329.