

# Applying Feedback Lessons to Online Medical Question Banks

Online medical question banks are increasingly popular resources for residents and fellows preparing for high-stakes examinations, such as the US Medical Licensing Examination Step 3, the membership examinations of the Royal Colleges of Physicians in the United Kingdom, in-training examinations, and specialty board certification examinations.<sup>1,2</sup> Question banks often offer various test-taking modes, 2 of which are commonly called *tutor* and *exam* modes. Tutor mode allows physicians to review answers and explanations immediately after the test-taker completes each question in a block, whereas exam mode delays this opportunity until after the entire block has been completed.

Use of question bank modes appears to vary, and optimal strategies have not been empirically determined. However, applying findings from research on formative feedback may inform this decision. The potential benefits of providing prompt, focused feedback to medical trainees have long been recognized,<sup>3</sup> and giving proper feedback has been demonstrated to improve clinical performance.<sup>4</sup> The educational basis of feedback is that it can confirm, supplement, or restructure learners' understanding of particular concepts.<sup>5</sup>

The value of reviewing a question's explanation derives not only from the text of the explanation itself, but also from associating it with the information presented in the question. This includes factors derived from the history, physical examination, and both laboratory and imaging results. If a block of other questions intervenes between a particular question and its explanation, as occurs during exam mode, it may impair the learner's ability to make these associations. In addition, exam mode may overwhelm the learner cognitively, by displaying all of the incorrect answers at the conclusion of the block, whereas tutor mode distributes the need to review

these answers more evenly throughout the block. While physicians need to develop test-taking endurance and experience, they could more effectively acquire these skills through formal self-assessments, with a designated purpose of simulating the actual examination with respect to content and timing.

Given the increasing emphasis on interactive learning tools in graduate medical education, the impact of using different question bank modes on learning and examination performance should be studied empirically. Expected benefits include optimizing trainee performance on individual examinations, as well as supporting physicians in a lifelong pursuit of evidence-based practice.

**Kishore L. Jayakumar, BS**

MD/MBA Candidate, Perelman School of Medicine, The Wharton School, University of Pennsylvania

The author reports having performed contract work for Pastest, which provides online medical examination preparation and question bank materials.

## References

1. McCullough E. How do you prepare for your board exam? Survey results. *NEJM Knowledge+*. <https://knowledgeplus.nejm.org/blog/prepare-for-your-board-exam>. Accessed October 31, 2017.
2. American College of Physicians. Test yourself with internal medicine board review questions. <https://www.acponline.org/featured-products/mksap-17/internal-medicine-board-review-questions>. Accessed October 31, 2017.
3. Ende J. Feedback in clinical medical education. *JAMA*. 1983;250(6):777-781.
4. Veloski J, Boex JR, Grasberger MJ, et al. Systematic review of the literature on assessment, feedback and physicians' clinical performance: BEME Guide No. 7. *Med Teach*. 2006;28(2):117-128.
5. Hattie J, Timperley H. The power of feedback. *Rev Educ Res*. 2007;77(1):81-112. <http://education.qld.gov.au/staff/development/performance/resources/readings/power-feedback.pdf>. Accessed October 31, 2017.