LETTERS TO THE EDITOR

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Technology-Based Learning for Endoscopic Ultrasound

Dear Editor:

I read the article by Wani et al[1] with great interest and wanted to share my views. Competency-based medical education certainly has led to a more objective approach to competency achievement, with a focus on outcomes, abilities, and greater learner centeredness, with a shift away from time-based training.[2] Add to this the more recent concept of entrustable professional activities in gastroenterology fellowship training focused on the translation of theoretical competencies to clinical practice with a view of entrusting an individual to perform a competency unsupervised.[3]

In all forms of training it is agreeable that people learn at different rates as noted by the study authors. It also is clear that for current trainees, technology plays a huge role in their learning. It now is uncommon to find a lecture hall or seminar room devoid of mobile devices. In addition, trainees use such devices to access the latest evidence, complete online learning modules, portfolios, and prepare for examinations.

One recent example of technology-based learning is the concept of the flipped classroom, in which candidates are provided preparatory material typically in the form of videos before a teaching session. Class time then is spent problem solving cases among peers with the added benefit of peer-to-peer and instructor-to-peer feedback. The flipped classroom recently was used for pediatric gastroenterology teaching with positive outcomes.[4] A second example of merit is that of spaced learning, in which questions are e-mailed to candidates in a spaced repetitive fashion with the onus of enhanced retention and understanding.[5] A further example is that of adaptive learning, in which computer-based technology optimizes content for the learner, with a specific focus on the areas in which they are less knowledgeable.[6]

Therefore, it would prove interesting to see an adjunct-based analysis of technology-enhanced learning in addition to endoscopic ultrasound procedure assessment among trainees. This may prove to increase the rate of competency achievement with the added benefit of being learner-specific.

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Conflicts of interest
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Reply. Dr Sharma[1] has highlighted the potential role of technology in learning and the impact this may have on the rate of competency achievement at the end of the training period. Three novel concepts were introduced in this letter: flipped classroom (eg, trainees watch video tutorials and actual time in the classroom is spent together working on problems interactively with the trainer), spacing effect (repetitive online education, spaced throughout training), and adaptive learning (computer-based technology focusing on areas in which trainees are less knowledgeable).[2] These concepts increasingly are being used for cognitive learning, but have limited data supporting their use in acquiring procedural expertise, and they have not been evaluated in gastrointestinal endoscopy training.

To put this in perspective, it is important to understand the current status of endoscopy training in the United States. In a recent survey-based study, we examined the readiness of gastroenterology and hepatology fellowship programs for competency-based evaluation in endoscopic procedural training. In this study, 23% of program directors reported that they do not have formal endoscopy curricula, and a minority of programs (43%) used online training modules and didactic sessions (72%) formed the bulk of the endoscopy curriculum.[3] These findings suggest that there are opportunities to incorporate technology into the current static and heterogeneous training curricula.

Future studies need to evaluate the role of these novel teaching techniques and its impact on competency achievement in endoscopy. We found that most program directors reported that competence is assessed by procedure volume (85%) and teaching attending (trainer) evaluations (96%). However, procedure volume is insufficient to measure competence in gastrointestinal endoscopy. Two ongoing large multicenter prospective studies will assess learning curves and competence in