

RAPID COMMUNICATIONS

A paired curriculum for surgical faculty and residents on adult education

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Abstract

A paired surgical educator curriculum on adult learning was designed for residents and faculty at a large otolaryngology residency program. In its first year of implementation, 12 core faculty and 20 residents attending the workshops, with positive feedback from all participants and measurable improvements in their understanding of basic terms in adult cognitive learning theory. The curriculum enabled faculty and residents to practice applying educational theories to their every day clinical teaching activities and is adaptable for use in other surgical training programs.

Level of Evidence: IV.

KEYWORDS

educational intervention, graduate medical education, surgical education, teaching strategies

1 | INTRODUCTION

Academic surgical faculty and residents bear the responsibility of teaching junior learners, but most surgeons have limited knowledge of contemporary best practices in adult education. A basic understanding of surgical training as a cognitive apprenticeship is useful to inform teaching strategies.¹ The more experienced surgeon should start by assessing the trainee's readiness for learning (i.e., zone of proximal development) such that the educational experience can then be tailored for each trainee as the senior surgeon makes their thinking visible by providing appropriate levels of verbal or technical scaffolding at each step. A recent review of the literature found that very few surgery-specific resident-as-teacher programs have been published.² To improve the quality of teaching at our otolaryngology residency program, we designed and implemented a paired surgical educator curriculum for trainees and surgical faculty to introduce these foundational principles in adult education.

2 | METHODS

An interactive curriculum was developed with guidance from experts in facilitating adult education from the Harvard Graduate School of Education. The curriculum includes a 90-min virtual workshop for faculty that is complementary to two 60-min in-person sessions for residents. Workshop agendas are summarized in Table 1. The sessions were facilitated by a junior attending (author JXC), a recent graduate of the residency program, who shared the perspectives of both faculty and residents. Before their first session, participants answered a four-question Qualtrics survey about their understanding of three foundational concepts in adult learning theory (cognitive apprenticeship, zone of proximal development, scaffolding) as well as the briefing, intraoperative teaching, debriefing (BID) model³ of surgical teaching. Participants were then asked to watch a 5-min video describing the BID model. During the session, participants were introduced to the aforementioned adult learning theory concepts and were then given the opportunity to apply them to hypothetical educational scenarios

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TABLE 1 Paired workshops for faculty and trainees on applying foundational principles in adult learning theory.

Faculty workshop 90 min with 10-min break		Resident workshops two 60-min sessions	
Minutes	Activity	Activity	Activity
5	Seminar objectives After this session, participants will be able to: <ol style="list-style-type: none"> 1. Describe three principles in adult learning theory: cognitive apprenticeship, scaffolding, zone of proximal development. 2. Explore how the BID (briefing, intraoperative teaching, debriefing) model of surgical teaching applies these principles.² 3. Design BID model scripts for two different levels of learners for common surgeries. 	Seminar 1 objectives After this session, participants will be able to: <ol style="list-style-type: none"> 1. Describe three principles in adult learning theory: cognitive apprenticeship, scaffolding, zone of proximal development. 2. Explore how the BID model of surgical teaching applies these principles. 3. Design BID model scripts for more junior learners for common procedures. 	Seminar 2 objectives After this session, participants will be able to: <ol style="list-style-type: none"> 1. Describe three principles in adult learning theory: cognitive apprenticeship, scaffolding, zone of proximal development. 2. Identify ways to use these principles to improve their own learning.
5	Review group norms E.g., Participants endeavor to focus/be present, make space for all voices, and assume positive intentions of others.	Review group norms	Review group norms
8	Activity 1: Group brainstorm What are the challenges of teaching residents in the hospital? What are the opportunities? <i>Closing facilitator move: Acknowledge that we cannot address many of these challenges, but this workshop is about maximizing time with trainees.</i>	Activity 1: Group brainstorm What are the challenges of teaching more junior residents or medical students in the hospital? What are the opportunities?	Activity 1: Group brainstorm What are the challenges of learning in the hospital?
12 to 15	Activity 2: Theory <ol style="list-style-type: none"> 1. New ideas: cognitive apprenticeship, scaffolding, zone of proximal development. 2. Apply theories to explain the BID model of teaching that tailors the level of scaffolding provided to the learner's zone of proximal development. 	Activity 2: Theory <ol style="list-style-type: none"> 1. New ideas: cognitive apprenticeship, scaffolding, zone of proximal development. 2. Apply these theories to explain the BID model of teaching. 	Activity 2: Review theory Organize groups of 2–3 where at least one person attended the first session. That person teaches others in the group about cognitive apprenticeship, scaffolding, zone of proximal development, BID model using materials from the prior session.
25 to 30	Activity 3: Application 2 min—Introduce activity: Design two BID model scripts (one for junior residents and one for senior residents) for a common surgery. 8 min—Individual time with worksheets 10 min—Pair with partner to give/get feedback on scripts. What differentiates junior and senior resident BID model scripts? 10 min—Group reflections on how BID model scripts changed after working with partner.	Activity 3: Application for teaching 2 min—Introduce activity: Design a BID model script for a more junior trainee. Junior residents teach clinic procedures to medical students. Senior residents teach common surgeries to junior residents. 5 min—Individual time with worksheets 8 min—Pair with partner. Get/give feedback on scripts. 10 min—Group reflections.	Activity 3: Application for learning 3 min—Individual time thinking of an example of a poor learning experience. What about the experience that did not model a cognitive apprenticeship? 10 min—Share out in groups of 3: How could these experiences have been improved? 12 min—Group reflections.
15	Additional time for general discussion/questions.		

common to their daily clinical activities. Participants then met in small groups to give and receive peer feedback for their learning plans. After the session(s), participants were asked to retake the quiz to define the same concepts tested before and also asked for their general feedback on the seminar. The local Institutional Review Board determined that this was not human subjects' research.

3 | RESULTS

In the first year of implementation, the surgical educator workshop was attended by 12 core teaching faculty at the Mass. Eye and Ear. Among trainees, 16 residents attended the first session and 20 attended the second session of the two-part series out of the

20 residents and 5 rotating interns in the department. Each faculty member produced two BID model teaching plans for a common surgery, customized for junior or senior residents. Each resident drafted a BID model teaching plan for a procedure they could teach a more junior trainee. Eleven of 12 faculty participants (92%) responded to the post-workshop survey; 18 of 20 trainees (90%) responded to the post-workshop survey after the second session. Twenty-seven of 29 respondents (93%) answered all knowledge-based questions correctly after their final session (and the remaining two answered isolated questions incorrectly), as compared with 1 of 29 respondents in the pre-session surveys. All faculty and trainees ($N = 29$) responded positively to the session in free response feedback; respondents appreciated that the program provoked useful, interesting, and/or deep discussions ($N = 13$) and was interactive ($N = 6$). When asked for constructive criticism, some participants felt that sessions could be longer ($N = 3$), discuss more specific examples ($N = 3$), and/or include interaction between faculty and trainees ($N = 3$).

4 | DISCUSSION

This paired curriculum is an adaptable framework that surgical training programs can use to improve residents' and faculty members' basic understanding of adult education theory with the opportunity to practice applying it to their everyday teaching. The interactive, learner-centered activities could be customized to each group of participants, enabling translation across specialties, programs, and institutions. These workshops for residents and faculty may be complementary to those described in a recent study on teaching otolaryngology fellows to be surgical educators.⁴

Presently, this curriculum is slated to repeat every 3 years for trainees at our 5-year residency program, with plans for future expansion to other teaching faculty within the department. As the trainee workshop activities are personalized for senior and junior residents, an individual resident may come away with different lessons from the workshops at different timepoints as they assume increasing responsibilities as educators over time. Workshops should continue to be facilitated by individuals with insight into the specifics of the training environment to personalize examples and deepen discussions.

Future modifications to this curriculum will be made in response to the feedback collected. This present curriculum separated resident and faculty learners as it was hypothesized that conversations would

be more authentic among peers. Additional sessions where residents and faculty could practice bidirectional feedback strategies together would be complementary.

5 | CONCLUSION

Interactive surgical educator workshops for faculty and residents on foundational concepts in adult learning theory allowed participants to practice applying education theories to their clinical teaching activities.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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REFERENCES

1. Lyons K, McLaughlin JE, Khanova J, Roth MT. Cognitive apprenticeship in health sciences education: a qualitative review. *Adv Health Sci Educ.* 2017;22(3):723-739. doi:10.1007/s10459-016-9707-4
2. Geary A, Hess DT, Pernar LIM. Resident-as-teacher programs in general surgery residency – a review of published curricula. *Am J Surg.* 2019;217(2):209-213. doi:10.1016/j.amjsurg.2018.09.003
3. Roberts NK, Williams RG, Kim MJ, Dunnington GL. The briefing, intraoperative teaching, debriefing model for teaching in the operating room. *J Am Coll Surg.* 2009;208(2):299-303. doi:10.1016/j.jamcollsurg.2008.10.024
4. Cramer JD, Chi DH, Schaitkin BM, Eibling DE, Johnson JT. Teach the teacher: training otolaryngology fellows to become academic educators. *Laryngoscope.* 2018;128(9):2034-2048. doi:10.1002/lary.27156

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