

when low performers were observed 6 months later after the education intervention, they significantly improved their compliance. These specific positive behaviors may be used by ED providers to improve the patient experience.

39 Implementation of a Learner Centered Teaching Curriculum in an Emergency Medicine Residency Program

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Background: Lectures are a passive learning technique thus limiting knowledge transference and retention. Active learning formats are increasingly popular in graduate medical education as they are more engaging and preferred by learners. The effect of implementing an active learning curriculum in an Emergency Medicine (EM) residency on objective measures of knowledge, like the In-Training Exam (ITE), is unknown.

Objectives: We hypothesize that the addition of active learning to an EM residency curriculum will result in improved knowledge acquisition and retention, as measured by performance on the ITE.

Methods: This was a single center, single group, pre-post study of the effect of changing to a Learner Centered Teaching (LCT) curriculum in an EM residency training program. All residents with both 2014 (pre-) and 2015 (post-) ITE scores were eligible for inclusion. Starting in July 2014 the LCT curriculum was implemented with approximately half of the core content lectures replaced with small group discussions that included pre-discussion homework submitted in advance. Performance on the ITE was evaluated for all residents completing both 2014 and 2015 exams. The mean change in Percentile Rank on the ITE and the mean Distance from Target score, how far the subject was from their year specific goal, were evaluated with a paired t test. A secondary outcome evaluated was change in Percentile Rank and Distance from Target for the residents Below Target in 2014.

Results: 23 residents were enrolled. The mean change in percentile rank was -1.2 (95%CI -9.5-7.2, $p=0.77$) for all subjects and +7.4 (95%CI 3.5-18.2, $p=0.13$) for residents Below Target in 2014. The mean change in Distance from their Target Score was 0.7 (95%CI -1.1-2.5, $p=0.44$) for all subjects and 2.2 (95%CI -0.5-4.9, $p=0.09$) for residents Below Target in 2014.

Conclusions: Implementation of an LCT curriculum did not show a statistically significant change in ITE performance. There was a trend toward greater improvement in both Percentile Rank and Distance from Target score for residents who were below target in 2014. This study was not adequately powered to show a significant difference in ITE performance among the sub-set of residents below their target score in 2014. The impact of an LCT curriculum on ITE performance for this population is an area for further study.

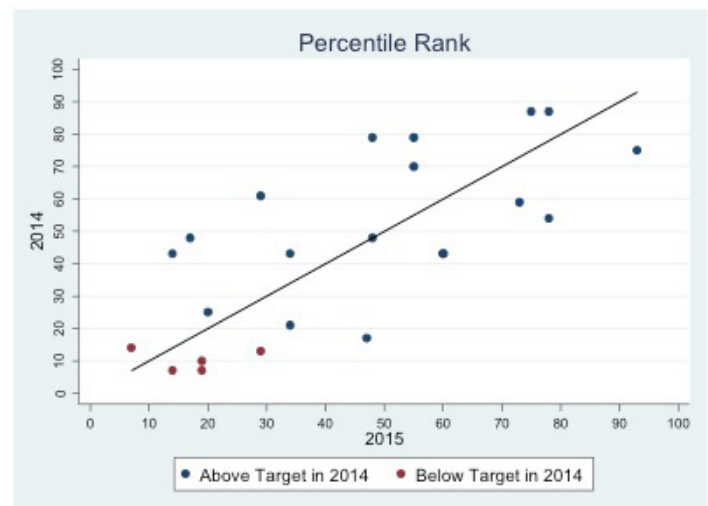


Figure 1.

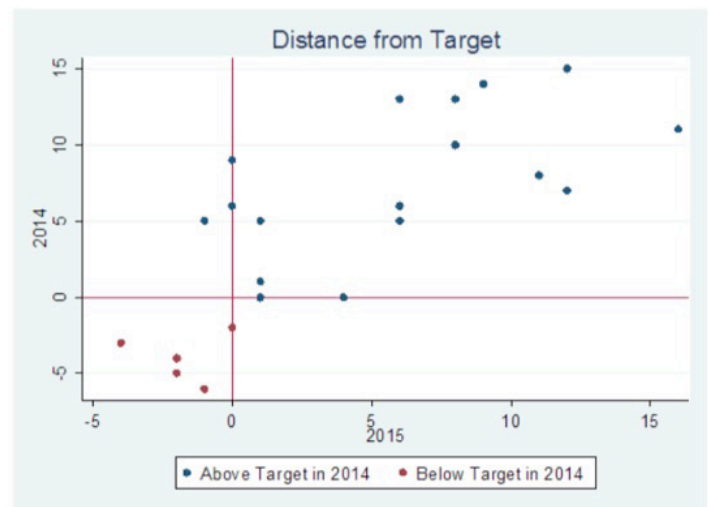


Figure 2.

40 Incorporation of Images on Presentation Slides Positively Impacts Continuing Medical Education Conference Speaker Evaluations

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Background: Although continuing medical education (CME) presentations are common across health professions, it is unknown whether slide design impacts audience evaluations of the speaker.

Objectives: Based on the conceptual framework of Mayer's theory of multimedia learning, this study aimed to determine whether text density and image use on slides affect overall speaker evaluations.

Methods: This retrospective analysis of six sequential CME conferences (two annual emergency medicine

conferences over a three-year period) used a mixed linear regression model to assess whether post-conference speaker evaluations were associated with image fraction (percent of slides with at least one image) and text density (number of words per slide).

Results: A total of 105 lectures were given by 49 faculty members. A total of 17,397 evaluations were included. On average, 47.4% (SD=25.36) of slides had at least one image, modeled as “image fraction” 0.474. Image fraction significantly predicted overall higher evaluation scores [F(1, 100.676)=6.158, p=.015] in the adjusted model. The mean (SD) number of words per slide was 25.61(8.14) but was not a predictor [F(1, 86.293)=0.55, p=.815]. Of note, the speaker [χ²(1)=2.952, p=.003] and speaker seniority [F(3, 59.713)=4.083, p=.011] significantly predicted higher scores.

Conclusions: This is the first published study to date assessing the association between slide design and CME speaker evaluations by an audience of practicing clinicians. The incorporation of images was correlated with higher evaluation scores, in alignment with Mayer’s theory of multimedia learning. Contrary to this theory, however, text density was not a predictor. This suggests that predictors speaker evaluations are multifactorial. Faculty development efforts should focus on teaching best practices in both slide design and presentation skills.

41 Inside the Black Box: Using Think Aloud to Study Clinical Reasoning During Simulation

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Background: Medical educators use simulation to assess how EM trainees develop differential diagnoses. Trainees reflect retrospectively on their clinical reasoning during post-scenario debriefings. Debriefings, however, mask individual decision making due to hindsight bias and peer influence. We posit that adopting “think aloud” from cognitive psychology, in which individuals express thoughts as they occur, avoids such biases.

Objectives: Explore the feasibility of using think aloud methods during SIM scenarios to elicit how trainees, in real time, construct differential diagnoses.

Hypotheses:

1. Using think aloud methods during scenarios is feasible.
2. Think aloud methods prompt trainees to describe how they construct differential diagnoses.

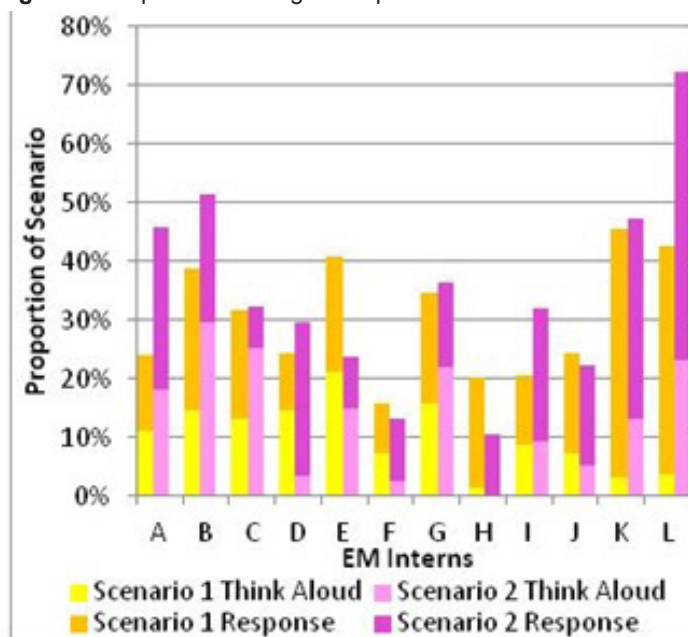
Methods: All EM interns from two residency programs participate during an orientation day (n=21). This experiment generates qualitative and quantitative data by coding videos.

We use convergent parallel mixed methods to analyze the data. The intervention includes group think aloud exercise (n=5,6); individual participation in two Standardized Patient (SP) scenarios (anaphylaxis, myocardial infarction); group debriefing; and individual questionnaires. We instruct interns to think aloud and SPs to ask about diagnoses during scenarios. Two blinded researchers independently code each second of 10 minute scenarios. They use content analysis, applying researcher generated predetermined descriptive codes to qualitative data. Codes include diagnoses and cues (e.g., symptoms).

Results: Using think aloud methods during scenarios is feasible. Interns think aloud as they interview and examine SPs (n=12/21 Limitation: Data lost due to technical error). Scenario 1: Interns think aloud 9.91% median of scenario time (range 1.33 - 20.95); they address SP questions for 18.77% median time (range 8.66 - 42.55). Scenario 2: Interns think aloud 14.16% median time (range 0 - 29.67); they address SP questions for 19.41% median time (range 7.19 - 49.12) (See Cassara Figure 1). Initial content analysis suggests that these methods prompt interns to describe how they use cues to construct differential diagnoses.

Conclusions: Thinking aloud during scenarios prompts interns to describe how they construct differential diagnoses, providing educators with vital data for assessing and remediating diagnostic reasoning.

Figure 1. Proportion thinking aloud per scenario.



42 Multisource Feedback in a Simulation-Based Milestone Assessment of Emergency Medicine Residents

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