Building Competence - An Active-Learning Approach



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Introduction Bedside Cardiac Assessmens Background The performance of bedside cardiac assessment (BCA), a core clinical ability, 1 is deteriorating. Fewer clinical instructors feel comfortable teaching BCA, making the problem urgent and self-perpetuating.^{2,3} **Abilities** We hypothesized that a systematic,⁴ active-learning approach to teaching BCA would improve student **Attitudes** performance and designed a multiinstitutional study to test that hypothesis. Activities for Entering Residency The Problem Instructors The Purpose didn't learn Kolb – Experiential Learning^{5,6} skills well Active-learning theories Concrete Experience Feeling (e.g., Kolb): learners need not just to watch and to think, but to do and to feel! **Bedside Cardiac** Assessment • Hypothesis: a systematic Observation Watching Instructors approach, taught with Learners can't teach don't learn active-learning instruction, skills well skills well Abstract Conceptualisation Thinking will increase competence in BCA abilities Approach^{7,8} **Implement FC and Efficacy Study** Beta-test FC locally Efficacy study Population: 400 medicine clerkship students, 4 US and international sites **Educational** Approach a. Flipped classroom (FC) design allows time for processing and peer teaching b. Framework: align objectives, curriculum, and assessment Outcomes: between-group differences on BCA knowledge and attitude Construct FC **Assess Needs Iteratively Improve** a. Developed Curriculum Competency based lipped class and questionnaire medical education Team: video producer, literature, clerkship instructional designer, clinical faculty and student consult, talent Pre-class assignments surveys

(PCAs): script, stage, edit 13 short videos + exercises In-class activities and

Facilitator Guide

questionnaires

b. Platform: uploaded PCAs, Facilitator Guide,

Outcomes

Active-Learning Resource - Flipped Classroom

Learning **Objectives**

• Explain clinical significance of each skill

Recognize

- specific physical exam findings • Use approach to
- ımprove diagnostic reasoning
- Determine need for confirmatory testing
- Integrate knowledge, skills and attitudes to communicate with patients in a simulated encounter

Online Pre-Class 1

View A-E videos each sandwiched between practice questions

In-Class Session 1: a) Think-pair-share case discussion b) JVP peer exercises c) Question Pool

nmmm

View F-M videos each sandwiched between practice questions

In-Class Session 2: a) Name That Heart Sound Team Game

- Simulated Clinical Encounter exercise

Formative Assessment to Date⁹

Qualitative

- In post-class evaluations, learners rated the JVP exercises and heart sound games most highly. Some felt pre-class time constraints.
- Facilitators actively incorporated feedback into in-class activities

Quantitative Pilot data analysis: convenience sample "got me thinking" "heart Sounds" "see bant vasif vactic only the pre-day of the art of efficited line to watch "Send more email remit 'Shorter pre-class assignmen "Send more email reminder of BCA medical knowledge items 81 pre-intervention and 23 pre-control; 20 post-intervention and 6 post-control participants Both groups increased significantly

reating A Framework For Cardiac Exam"

Send more interested to the process of the concepts of

0 < 0.006): control 62% to 78%, intervention 63% to 75%

Discussion

- Cognitive science-based instructional design: encourages self-directed study and peer collaboration
- Curriculum fosters day-to-day clinical competencies, thoughtful use of diagnostic technology, notions of patient trust
- Flipped classroom v2.0 incorporates extensive learner and facilitator feedback
- Pilot data showed just non-inferiority: is "medical knowledge" *not* the primary effect?

Limitations

• Flipped classroom

- Considerable upfront development effort but easily deployed for successive classes
- Need pre-class buy-in and motivation, internet access, willing clinician-facilitators

• Research-in-progress

- Heterogeneous research sites (culture, control group curricula, etc.) but may increase generalizability
- Durability of learning is not captured

Next Steps

- Submit flipped classroom educational resource to MedEdPortal[®]
- Collect and analyze responses to date
- Validate new questionnaire items querying skill mastery and workplace transfer

Critical Impact

Increase effectiveness of clinical skills training to help reverse cycle of clinical skill deterioration

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