Inspired to Learn: Integrating Pre-Clinical Respiratory Educational Principles into Clinical Clerkship Practice

Shannen Sharpe, Rylee Friel, Emily Barron Emily Shockley, Aish Thamba, Erin Bontrager, Sruthri Ganapaneni, Kennedy Stoll, Natalie Vellutini, Lynn Roy, Shannon Cooper, Komal Kochar, Graham Carlos
Indiana University School of Medicine

Introduction

- IUSM students report lack of pre-clinical content in clinical rotations on Graduate Questionnaire (GQ)
- Student performance on respiratory/pulmonology questions on USMLE Step 1/2 is similar to other disciplines despite effective PGR teaching method
- PGR team presents clinical vignettes interactively instead of recorded didactic lectures
- Current model lacks sufficient content review of relevant Phase I material based on student feedback
- Students request additional support for pre-clerkship study/review materials
- Study aims to evaluate impact of interactive pre-clerkship modules reviewing Phase I PGR material on medical knowledge and clinical competencies of Phase II students.

Background

- PGR curriculum offers opportunity to evaluate impact of UME on knowledge retention and engagement from metacognition perspective
- Diverse group of students and faculty worked with IUSM Research in Medical Education unit to quantify engagement and knowledge retention in scholarly project
- PGR is a unique multi-modal teaching design at a large medical school with 9 campuses
- PGR uses zoom, Top Hat, and case-based teaching approach with multidisciplinary panel to increase student engagement.

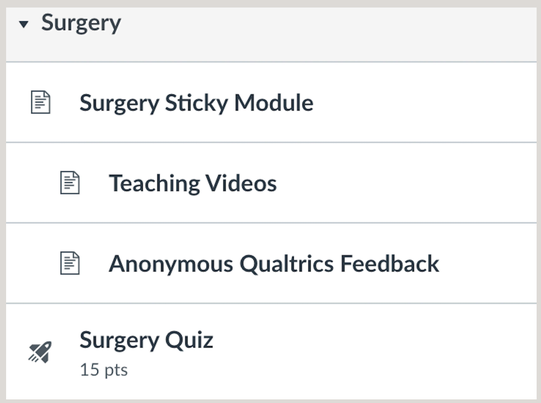

Figure 1. Example Student View of Clerkship Canvas Modules

Clerkship	Subject Topics
Internal Medicine	• Pleural effusion (Starling equation, pathophysiology) • Pulmonary embolism (V/Q mismatch, shunt mechanism) • Pulmonary hypertension • Pulmonary circulation
Anesthesia	• Mechanics of respiration • Alveolar gas equation • Alveolar ventilation • Carbon dioxide transport • Mechanical ventilation
Family Medicine	• Lung cancer • Pathophysiology of pneumonia (hypoxic vasoconstriction, shunt mechanism) • Interstitial lung disease
Neurology	• Sleep apnea (Central vs Obstructive) • Pulmonary Function Tests • Lung receptors • Control of ventilation
Surgery	• Pneumothorax and pleural function • Shock (Fick equation, hemodynamics)
Pediatrics	• Embryonic development • Organ structure and function • Respiratory Distress Syndrome • Cystic Fibrosis

Figure 2. Subject topic organization of questions created for each clerkship.

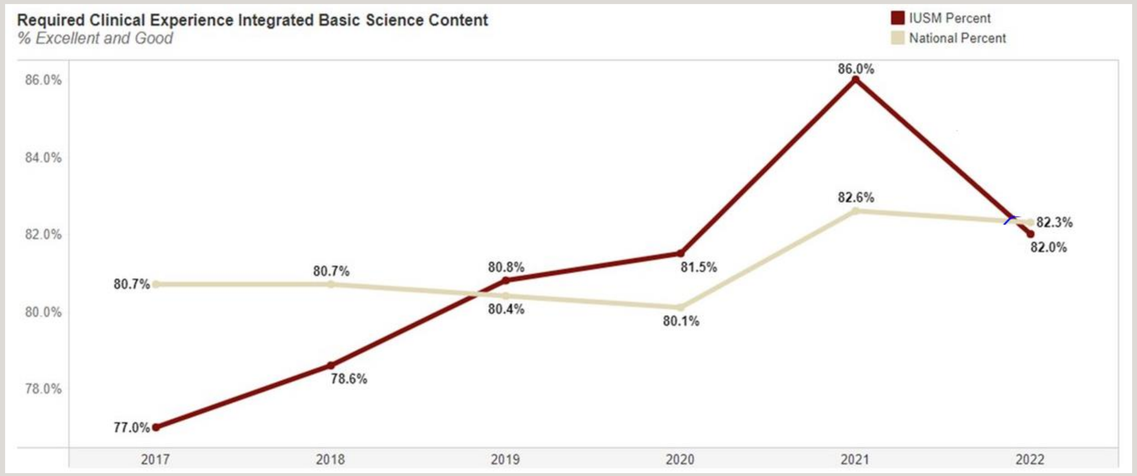

Figure 3: Graphical representation of IUSM students' responses on GQ compared to national student responses

Objective

Evaluate student engagement and knowledge retention through clerkship standardized examination performance, Step 2 performance, and GQ with the implementation of a spaced repetition learning model comprised of interactive pre-clerkship modules which reinforce session objectives introduced in pre-clinical education.

Materials & Methods

- Phase I of the PGR includes over 200 board-style questions spread across nine sessions
- Students answer these questions on Top Hat and discuss the reasoning for correct vs. incorrect answers with an expert panel
- Similar content is tested again during local and NBME exams
- Proposed creation of optional modules for each clerkship to be used prior to Phase II
- Modules include a question bank supplemented with videos to enhance performance on clinical clerkships and Step 2
- Question bank would utilize the same questions from Phase I to improve concept retention and memory
- Instructional videos connect physiology to the clinical scenarios students expect to encounter during their clerkship
- Anonymous tracking of student engagement through a pilot-tested survey and performance on the modules, clerkship NBME exams, Step 2, and GQ
- Assess knowledge gaps to supplement future grand rounds curriculum while providing clinically relevant information to improve patient care.

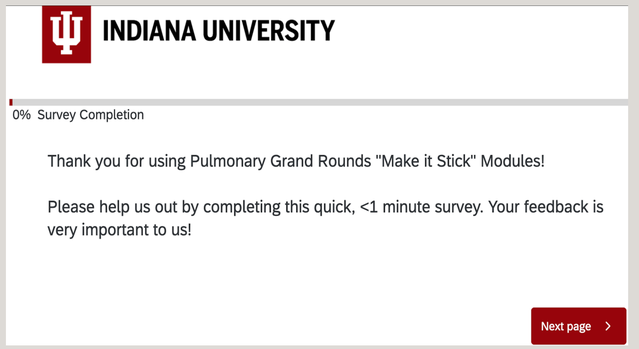

Figure 4. Qualtrics Survey Opening Page