

MedU Online CORE Cases Integrated with Flipped Classroom Workshops for Enhanced Engagement of Teachers and Learners

Jeffery P Hogg, MD (West Virginia University); Erin E O'Connor, MD (Temple University); Sravanthi Reddy, MD (University of Southern California); Carl R Fuhrman, MD (University of Pittsburgh); Laurie L Avery, MD (Harvard); Petra J Lewis, MD (Dartmouth)



www.med-u.org/core

BACKGROUND

The editorial board for Case-based Online Radiology Education (CORE) encourages the integration of CORE online cases for teaching the national medical student curriculum in radiology. Our vision includes:

- To provide radiology instruction for medical students that is organized, brain friendly, engaging, and an active learning experience, and
- To encourage a higher level of cognitive activity in students—including application, analysis, problem-solving, synthesis, and creation—by providing the opportunity to practice image-based clinical decision making, interpretation, and critical thinking skills for patient management.

Creation of teaching resources can be very time-consuming. A novice clinician educator may lack access to the images and expertise needed to create good resources suitable for the student-level learner.



OBJECTIVES

- Demonstrate ease of integration of CORE workshops into flipped classroom teaching by both practiced and novice teachers
- Enumerate factors that influence educators to engage in classroom instruction
- Assess student engagement with and delight in the workshops

WORK UNDERTAKEN

1 Development of Workshops and Instructors' Notes

Between 2011 and 2015, CORE editorial board members (or their assignees) created a teaching workshop for each online CORE case to emphasize key objectives. Each workshop, peer-reviewed by the CORE board, contains an image-rich Powerpoint™ (PPT) slide set and detailed notes for the instructor—including questions and tasks for learners.

2 Teacher Recruitment and Workshop Pilot

Faculty and/or R3–R4 residents were recruited to this integration study with the offer of a letter of commendation for their file if favorable teaching performance was demonstrated.

3 Response of Learners and Teachers

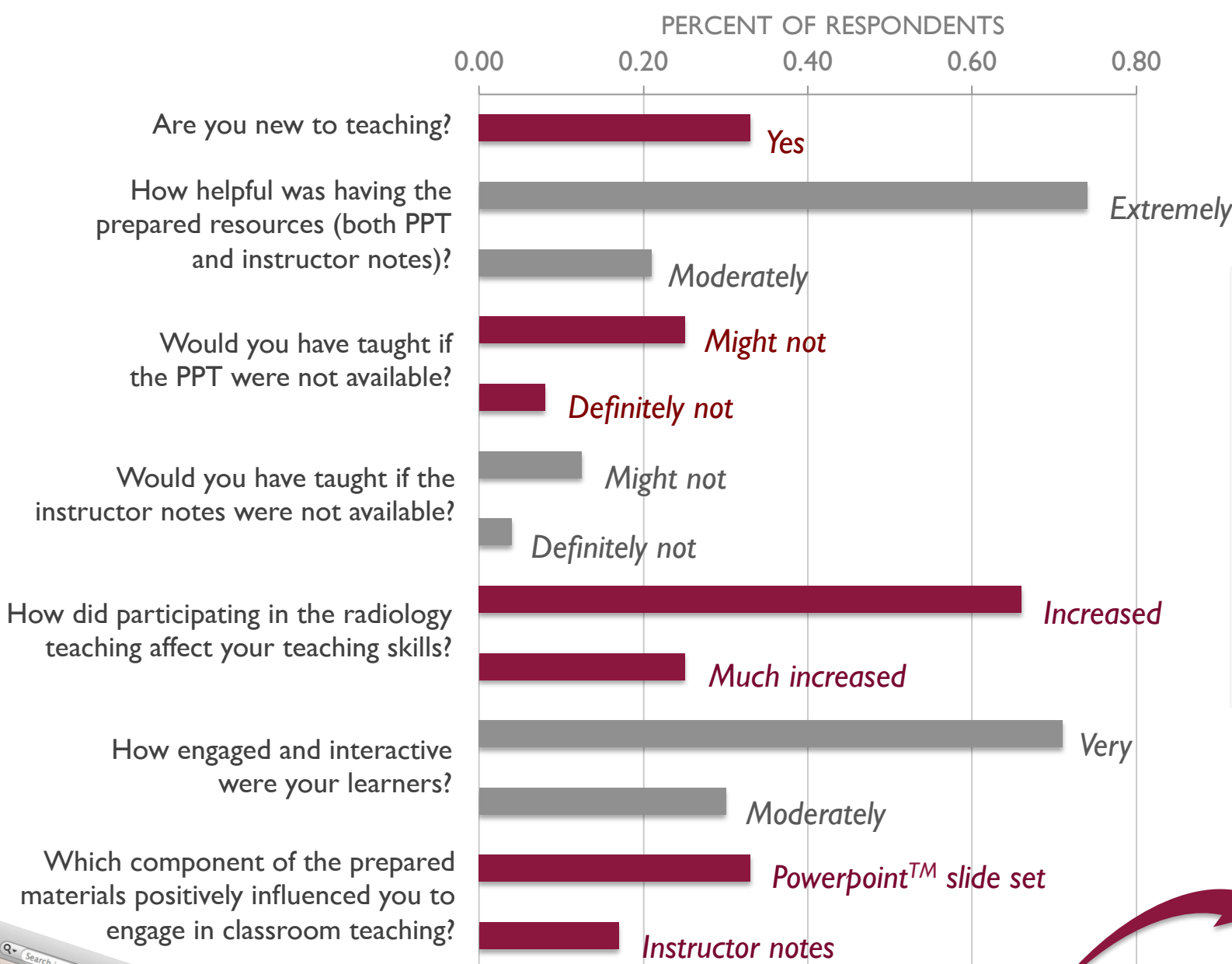
Learners (over two years) were surveyed to rank the online CORE cases and CORE flipped classroom exercises in comparison to other aspects of their radiology rotation.

After testing the use of CORE flipped classroom workshops in groups of students at five institutions, teachers—33% of whom were novice educators—were asked to complete a survey to determine the factors that influenced their decision to engage in teaching.

SUGGESTIONS FOR INTEGRATING CORE CASES AND WORKSHOPS INTO TEACHING

- Make students accountable to complete the online cases (i.e., make completion mandatory). Instructors can monitor student progress online.
- Assess learning on the cases using Radiology Exam Web's CORE exam or the AMSER standardized exam.
- Create other activities—such as evaluation of consults and practicing communication skills—that build on CORE online case content.

RESULTS



INSTRUCTOR SURVEY

A 10-item survey of radiology instructors (N=24) at five of the participating medical schools explored how the use of online CORE cases and flipped classroom workshops affected engagement of both teachers and learners.

STUDENT SURVEY

Once each in 2014 and 2015, medical students at one of the participating medical schools were asked to rank CORE online cases, CORE flipped classroom workshops, and other resources in order of the helpfulness of each to their learning on their radiology elective. Their pooled responses (N=36) are shown here.

CORE workshops	★★★★★
Online CORE cases	★★★★
Miscellaneous teaching sessions (e.g., "Jeopardy"-style reviews, quizzes, ad hoc tutorials)	★★★
Elective orientation/tour/introductions	★★
Textbook reading	★

DISCUSSION

- Providing collaboratively created and peer-reviewed resources and making them available to potential clinician educators may influence more academic radiologists and residents to engage in teaching of medical students.
- Particularly for novice teachers, the provision of image-based material was felt to be more valuable than the instructor notes.
- The students surveyed appear to enjoy the workshops, ranking them first among all other components of their rotation.
- Further study is needed to evaluate the effect of learning from the CORE workshops.