A Near-Peer-Led Flipped Classroom Effectively Increases First-Year Medical Students' Confidence in Answering USMLE-Style Questions

Medical Education Snapshots: Part 2

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Rationale

- Neuroscience is both important for future clinical practice and an area frequently tested on USMLE Step 1 examinations

- A study demonstrated a lack of confidence among medical students regarding patients with neurologic complaints to a point where the term "Neurophobia" has been coined[1]

- Peer-led sessions have been reported to benefit student learning[2]

- A peer-led flipped classroom was created by second year medical students to help first-year students practice applying course information to a clinical situation and demonstrated how it may be tested in board-style questions

Educational Objectives of the Session

By the end of this activity, learners will be able to:

1. Identify areas of weakness in the application of neuroscience topics.

2. Improve understanding of various brainstem lesions for application in board-style vignettes and clinical scenarios.

3. Improve understanding of various brain lesions for application in board-style vignettes and clinical scenarios.

4. Improve understanding of various visual field defects for application in board-style vignettes and clinical scenarios.

Design of Flipped Classroom

- Designed and led by MS2s (near-peers)

- High-yield themes of neuroscience tested on USMLE Step 1

- Clinical vignettes compiled into an interactive PowerPoint file

- 80 MS1s divided into four classrooms, each facilitated by a near-peer

  - Further divided into small groups of four students each

Implementation of Flipped Classroom

- 90 seconds to answer each question individually

- 2-3 minutes to discuss within small group

- Classroom discussion led by facilitator where groups explained

  rationale behind correct & incorrect answers

Study Design

- Attendance was mandatory within the neuroscience course
- Participation in the study was voluntary and written informed consent was obtained by all participants
- Pre-survey and Post-survey
  - Assessed perceived confidence of their ability to use a patient's history, physical exam, or neuroimaging results to identify a neurologic lesion or disease
  - Assessed perceived confidence on their ability to approach board-style clinical vignettes on neurologic conditions
  - Survey of usefulness of the session

Results

- Of the 80 students who consented to participate, 73 students completed all survey questions (91.2%)

Survey Question	Pre-Session Survey - Mean (Median)	Post-Session Survey - Mean (Median)	p-Value
Confidence in their ability to use a patient's history to identify neurologic lesion/disease	2.96 (3)	3.63 (4)	< 0.0001
Confidence in their ability to use physical exam findings to identify neurologic lesion/disease	3.24 (3)	3.65 (4)	< 0.0001
Confidence in ability to use neuroimaging to identify neurologic lesion/disease	2.71 (3)	3.49 (4)	< 0.0001
Confidence in ability to approach board-style question regarding neurologic conditions	2.61 (3)	3.56 (4)	< 0.0001

Survey Question Topic	1 – Strongly Disagree	2 - Disagree	3 – Neither Agree nor Disagree	4 - Agree	5 - Strongly Agree
1. Session revealed gaps in applying basic neuroanatomy knowledge to clinical vignettes	0	2 (2.67%)	12 (16%)	27 (36%)	34 (45.3%)
2. Session successfully addressed any revealed gaps	1 (1.33%)	3 (4%)	9 (12%)	36 (48%)	26 (34.67%)
3. Gained useful critical thinking skills for approaching future board-style questions	1 (1.35%)	2 (2.7%)	11 (14.87%)	27 (36.49%)	33 (44.6%)
4. Have a better understanding of how content may be asked on board exams	0	2 (2.7%)	7 (9.46%)	25 (33.78%)	40 (54.05%)
5. Session questions were representative of board-style questions on other USMLE practice banks	0	2 (2.7%)	7 (9.46%)	10 (13.5%)	8 (10.8%)
6. Second-year medical students are a useful resource for learning how to approach board-style questions	0	1 (1.37%)	13 (17.8%)	17 (23.29%)	42 (57.53%)

Conclusions

- Survey responses support the conclusion that near-peer led educational sessions were beneficial to learning

- Limitation: subjective & self-reported data

- Potential limitation for responses to be impacted by individual facilitator knowledge base and teaching ability

- Future direction: creating additional interventions in the curriculum utilizing near-peers for board preparation

Works Cited

[1] Zinchuk AV, Flanagan EP, Tubridy NJ, Miller WA, McCullough LD. Attitudes of US medical trainees towards neurology education: "Neurophobia" - a global issue. BMC Med Educ. 2010;10:49. Published 2010 Jun 23. doi:10.1186/1472-6920-10-49

[2] Yu TC, Wilson NC, Singh PP, Lemanu DP, Hawken SJ, Hill AG. Medical students-as-teachers: a systematic review of peer-assisted teaching during medical school. Adv Med Educ Pract. 2011;2:157-172. Published 2011 Jun 23. doi:10.2147/AMEP.S14383