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%)

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Pre-Session Survey - Mean (Median)</th>
<th>Post-Session Survey - Mean (Median)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence in their ability to use a patient’s history to identify neurologic lesion/disease</td>
<td>2.96 (3)</td>
<td>3.63 (4)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Confidence in their ability to use physical exam findings to identify neurologic lesion/disease</td>
<td>3.24 (3)</td>
<td>3.65 (4)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Confidence in ability to use neuroimaging to identify neurologic lesion/disease</td>
<td>2.71 (3)</td>
<td>3.49 (4)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Confidence in ability to approach board-style question regarding neurologic conditions</td>
<td>2.61 (3)</td>
<td>3.56 (4)</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Survey Question Topic</td>
<td>1 – Strongly Disagree</td>
<td>2 - Disagree</td>
<td>3 – Neither Agree nor Disagree</td>
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<tr>
<td>1. Session revealed gaps in applying basic neuroanatomy knowledge to clinical vignettes</td>
<td>0</td>
<td>2 (2.67%)</td>
<td>12 (16%)</td>
</tr>
<tr>
<td>2. Session successfully addressed any revealed gaps</td>
<td>1 (1.33%)</td>
<td>3 (4%)</td>
<td>9 (12%)</td>
</tr>
<tr>
<td>3. Gained useful critical thinking skills for approaching future board-style questions</td>
<td>1 (1.35%)</td>
<td>2 (2.7%)</td>
<td>11 (14.87%)</td>
</tr>
<tr>
<td>4. Have a better understanding of how content may be asked on board exams</td>
<td>0</td>
<td>2 (2.7%)</td>
<td>7 (9.46%)</td>
</tr>
<tr>
<td>5. Session questions were representative of board-style questions on other USMLE practice banks</td>
<td>0</td>
<td>2 (2.7%)</td>
<td>7 (9.46%)</td>
</tr>
<tr>
<td>6. Second-year medical students are a useful resource for learning how to approach board-style questions</td>
<td>0</td>
<td>1 (1.37%)</td>
<td>13 (17.8%)</td>
</tr>
</tbody>
</table>
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
