OME Journal Club -- Intro

15 minute discussion for each article

Goal: To facilitate faculty member’s knowledge about current trends in medical education and literature analysis through group discussions with peers.

Learning Objectives
As a result of participation in the OME Journal Club discussions, the faculty will be able to:
- Increase exposure to evolving concepts in teaching
- Identify, develop, and teach critical appraisal skills
- Promote medical education research
- Consider applying new concepts in teaching to course delivery
Is Reflective Ability Associated With Professionalism Lapses During Medical School?


Key Points

■ **Research Question:** What is the association between professional lapses and reflective ability in medical school?

■ **Method:** Case student group graduated Indiana U School of Medicine 2001-2009 with professional issues (n=70) compared to randomly-selected control student group (n=230) with no professional issues. Trained rater used a rubric on IM Professional Journal entries.

■ **Results:** The difference in reflection scores between the two groups in our study was small. For every 1 point decrease in reflection score, a student was 1.5 times more likely to have been cited for a professionalism lapse during medical school.

■ **Discussion:** Little empirical evidence supports the use of reflection as a tool to enhance professionalism.
Table 1

Levels of Reflection Measured by the Reflective Ability Rubric\(^a\) Used in a Study of Medical Students’ Reflective Ability and Professionalism Lapses, Indiana University School of Medicine, 2001 to 2009

<table>
<thead>
<tr>
<th>Level</th>
<th>Reflection performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Does not respond to the assignment</td>
</tr>
<tr>
<td>1</td>
<td>Describes procedure/case/setting without mention of lessons learned</td>
</tr>
<tr>
<td>2</td>
<td>States opinions about lessons learned without supporting examples</td>
</tr>
<tr>
<td>3</td>
<td>Provides superficial justification of lessons learned citing only one’s own perspective</td>
</tr>
<tr>
<td>4</td>
<td>Offers reasoned discussion well supported by examples regarding challenges, techniques, and lessons learned, includes obtaining feedback from others or other sources</td>
</tr>
<tr>
<td>5</td>
<td>Analyzes the influence of past experience on current behavior</td>
</tr>
<tr>
<td>6</td>
<td>Integrates all of the above to draw conclusions about learning, provides strategies for future learning or behavior, and indicates evidence for determining the effectiveness of those strategies</td>
</tr>
</tbody>
</table>

Topics to discuss

- Do you feel this study design answered the research question?
- Do you feel that reflection helps with promoting professionalism?
- What did you take away from reading this study?
How we tackled the problem of assessing humanities, social and behavioural sciences in medical education


**Key Points:**

1. **Research question:** What is the best practices for assessment of medical humanities, and the social and behavioral sciences?

2. **Method:** MS at Lancaster Medical School, UK, in Years 1-4 were given a scenario and 4 sets of questions (based on PBL learning objectives) with extended short answers each worth 10 marks.

3. **Results:** Applied Cronbach’s alpha test to formative and summative exams. Years 1 & 2 were 0.837 (good reliability) and 0.730 (good reliability), respectively.

**Discussion:** With this assessment format, students reported changing their approach to PBL, independent learning and exam preparation by taking a less reductionist, more interpretative approach to the topics studied.
Figure 1. The process of aligning assessment for the humanities, and social and behavioural sciences with the PBL curriculum. Dark grey (blue online) and light grey (orange online) boxes refer to the curriculum and assessment, respectively.
Question

Examples

**Example 1**  A Year 2 set of questions worth 10 marks for the professional practice, values and ethics curriculum theme.

In the scenario, the clinical trial is an example of non-therapeutic research. Define non-therapeutic research (1 mark) and identify where this is illustrated in the scenario (1 mark). Identify four ethical considerations for healthcare professionals when recruiting participants for non-therapeutic research (4 marks) and give one example of each from the scenario (4 marks).

**Example 2**  A Year 1 set of questions worth 10 marks for the health, culture and society curriculum theme.

Identify 4 aspects of this scenario that illustrate features of the concept of medicalisation (4 marks) and discuss these points with reference to definitions of medicalisation (6 marks).

**Example 3**  A Year 2 set of questions worth 10 marks for the professional practice, values and ethics curriculum theme.

In the scenario, the doctor knows that the tablets the patient can take to overcome her obesity do work because of the evidence surrounding the medicine. Define evidence-based medicine (2 marks). The GP refers to clinical guidelines during a patient's appointment about her weight loss. Define clinical guidelines (2 marks) and state two purposes that they serve (2 marks). The GP opts not to follow the clinical guidelines. Discuss the roles of clinical guidelines and doctors' judgement in clinical practice (4 marks).
Topics to Discuss

- How does a scenario-based assessment differ from a vignette?
- Did this research article give enough data to answer the research question?
- Can this scenario-based assessment format work in all courses?
The evolution of cognitive load theory and its application to medical education


**Key Points:**

- **Review question:** How did Cognitive Load Theory (CLT) evolve and what is a current holistic model for medical education design?

- **Method:** The paper reviewed the evolution of cognitive theory from empirical evidence to measuring CLT types to a 2 CL framework. A model developed to reduce extraneous CL and optimize intrinsic CL.

- **Discussion:** Medical education can thrive with application of CLT principles
Cognitive Load Terms

Working memory is limited by capacity and duration.

- Extraneous load can interfere with the construction or automation of schemas.
- Schemas can get automated if they are repeatedly and successfully applied.
- Automated schemas directly steer behavior and are not consciously processed in working memory.
Cognitive Load (CL) Evolvement

Empirical evidence
- Indirect measures → less working memory capacity remains if taken up by intrinsic cognitive load (effort to learn)
- Dual-task performance → simultaneously perform primary and secondary tasks
- Biomeasures → MRI, EEG and eye-tracking
- Subjective rating scales → NASA Task Load Index

Measure of types of cognitive load
- Instructional support beneficial to novice, but as become expert it can be detrimental (*expertise reversal effect*)
- Psychometric instrument to measure different types of cognitive load suggested extraneous CL, intrinsic CL, and subjective judgement of learning

Two-factor CL framework
- Learner with schemas has lower intrinsic CL
- More intrinsic CL increases learning – hypothesis driven PE with extraneous CL kept to minimum
- Extraneous + intrinsic CL exhaust working memory → little integration into knowledge schema
Intrinsic cognitive load
[1] The content of this activity was very complex
[2] The problem/s covered in this activity was/were very complex
[3] In this activity, very complex terms were mentioned
[4] I invested a very high mental effort in the complexity of this activity

Extraneous cognitive load
[5] The explanations and instructions in this activity were very unclear
[6] The explanations and instructions in this activity were full of unclear language
[7] The explanations and instructions in this activity were, in terms of learning, very ineffective
[8] I invested a very high mental effort in unclear and ineffective explanations and instructions in this activity
Which questions ask about intrinsic or extrinsic cognitive load?

<table>
<thead>
<tr>
<th>GENERAL QUESTIONS</th>
<th>Intrinsic CL</th>
<th>Extrinsic CL</th>
</tr>
</thead>
<tbody>
<tr>
<td>The clinical rotation learning objectives were clear.</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>My performance was assessed against the clinical rotation's learning objectives.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>I had an opportunity to follow a variety of different patients (with different medical conditions) on the clinical rotation.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Faculty and Residents provided me with sufficient feedback on my performance.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Faculty provided effective teaching during the clinical rotation.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Did you receive feedback on your performance at or around the midpoint of the clinical rotation?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The clinical rotation was well organized.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>My experience during this clinical rotation improved my abilities in patient interviewing and history taking.</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
CLT & Medical Education Design

6 strategies for reducing extraneous CL in novices
1. Provide worked examples
2. Use partial completion tasks in steps
3. Start with non-specific goals – open ended learning task
4. Avoid split attention to multiple sources
5. Respect modality boundaries visually and verbally
6. Avoid redundancy in information sources

3 strategies for optimizing intrinsic CL
1. Gradually increase task complexity as schemas develop
2. Gradually increase task fidelity (text→simulations→SP→patients)
3. More challenging assessment can improve learning if CL limits respected
1. Start: high support on low-fidelity low-complexity tasks and gradually fade that support as learners become more proficient

2. Repeat: low-fidelity with higher complexity tasks

3. Repeat #1 & 2 with subsequent tasks
Topics to discuss

- Did the authors explain how they did their review to answer the question?
- What one key point did you take away from reading this article?
- Would you implement CLT in the design of your instructional presentations?
Thank you for participating!

- **Save the date:** OME Journal Club next meeting is Tuesday, **May 10th, 2016**

- In the meantime – if you find an interesting article, please send it to me *gmarc@bu.edu* so we can include it in our upcoming meetings.