Spotlight on the Patient Case: *Improving Impactful Learning*

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Objectives

Upon completion of this presentation and workshop, participants should be able to:

- Provide basic information regarding use of patient cases in the classroom
- Compare and contrast case-based learning and problem-based learning
- Review the available evidence on case-based learning
- Describe elements to consider when writing a patient case
- Develop an effective patient case for use in the classroom
- Develop methods of objectively measuring / publishing use of case-based learning in courses
Background on Patient Cases in the Classroom

SPOTLIGHT ON THE PATIENT CASE: IMPROVING IMPACTFUL LEARNING
Why Are We Really Here?

Lectures:
- Students are passive
- Attention declines
- Info forgotten quickly
- Assumes all students are at the same level of understanding / pace of learning / learning style
- Doesn’t foster higher order thinking skills (application, analysis, synthesis)
We Want THIS!

http://www.marketingthatseasy.com/images/Cheering%20Classroom_iStock_000008134025XSsmall.jpg
"It isn’t the answer anymore... ...it is the question!"
"The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn"

Alvin Toffler
How Do We Help?

We have to shift our role:

"sage on the stage" → "guide on the side"
Yikes! Where is my PhD in Education?!
CONSTRUCTIVISM

**Benefits:**
- Experiences are real and authentic.
- Emphasizes first-hand involvement in problem situations.
- Creates an engaging learning environment.

**Problems:**
- Can subject learners to a heavy cognitive load that interferes with their cognitive processing abilities.

Myth:
- Constructivism is a zone of personal development.
- It is all about the learner's behavior.
- Constructivism is based on an authentic environment.
- Constructivism is useful only when used in new environments.

Reality:
- Constructivism is a theory that emphasizes the role of the learner in the learning process.
- It advocates for an active, constructive approach to learning.
- Constructivism is not limited to a specific environment, but it is effective when it is integrated with existing skills and knowledge.

**Knowledge Constructed by Learning:**
- Emphasize Social Element of Learning
- Inquiry-Based Learning can take place with minimal guidance.
- Learners construct their own learning environment
- Most effective when built on a foundation of existing skills and knowledge.
Constructivist Learning Theory

- Defines learning as an “active process in which learners are active sense makers who seek to build coherent and organised knowledge”.


21st Century Student:
4 Features of Student-Centered Teaching

1. An active involvement of students in order to construct knowledge for themselves by selecting, interpreting, and applying information in order to solve problems

2. A coaching and facilitating teacher

3. Use of authentic tasks / problems

4. Learning in cooperation with other students
What is Problem-Based Learning?

Traditional Learning

- Told what we need to know
- Memorize it
- Problem assigned to illustrate how to use it

Problem Based Learning (PBL)

- Problem assigned
- Identify what we need to know
- Learn and apply it to solve the problem

Where Does Case-Based Learning Come In?

- “The roots of CBL lies in the case method as applied at the Harvard Business School at the beginning of the 20th century, where it was considered as a problem-centered approach based on realistic situations.” (Baeten, 2012)

- CBL tries to create a bridge between theory and practice.
What is Case-Based Learning (CBL)?

7 Jump Process

1. Case is established
2. Analyzed by groups
3. Brainstorming
4. Formulate learning objectives
5. Disseminate new findings
6. Groups share results
7. Identify areas for improvement & integrated into clinical practice

Identify areas for improvement & integrated into clinical practice
What is Case-Based Learning?
## Differences between PBL & CBL

<table>
<thead>
<tr>
<th></th>
<th>PBL</th>
<th>CBL</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Topic</strong></td>
<td>Student</td>
<td>unknown</td>
<td>General content disclosed</td>
</tr>
<tr>
<td><strong>Faculty</strong></td>
<td></td>
<td></td>
<td>Full case disclosure</td>
</tr>
<tr>
<td><strong>Preparation</strong></td>
<td>Student</td>
<td>No advance prep; no prior experience or understanding of the subject matter</td>
<td>Lots of advance prep</td>
</tr>
<tr>
<td><strong>Faculty</strong></td>
<td></td>
<td></td>
<td>Lots of advance prep</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>Student</td>
<td>Direct discussion</td>
<td>Direct discussion</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>Provide no direction</td>
<td>Provide some direction</td>
</tr>
</tbody>
</table>
## Differences between PBL & CBL

<table>
<thead>
<tr>
<th></th>
<th>PBL</th>
<th>CBL</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Seeking</strong></td>
<td>Student</td>
<td>Some add’l data sought during/after case</td>
<td>No add’l data sought</td>
</tr>
<tr>
<td></td>
<td>LOTS of add’l data sought during/after case; LOTS of new knowledge</td>
<td>Some add’l data sought during/after case</td>
<td></td>
</tr>
<tr>
<td><strong>What drives learning?</strong></td>
<td>Faculty</td>
<td>The problem</td>
<td>Recall of prior studied material</td>
</tr>
<tr>
<td></td>
<td>Some add’l data sought</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Similarities between PBL & CBL

<table>
<thead>
<tr>
<th></th>
<th>PBL</th>
<th>CBL</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student centered</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Develop problem solving skills</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Develop self-directed learning</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Develop clinical reasoning skills</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>(making problem &amp; differential lists and choosing appropriate diagnostics)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop communication skills</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Difficulty in assessing skills</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Faculty labor required</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Proof?

- **Primary Difficulty**: lack of published objective evidence!
- **Systematic Reviews & Meta-analyses**:
  - Virtual patients-improved ability of students to ask questions
  - Majority show students enjoy Case-Based Learning
  - Consistently associated with improved learning outcomes
- **Baeten 2012 study**
  - 1098 education students
  - Compared lecture alone, Case-based alone, Mixed and Gradually implemented case-based **
How Can We Add to the Proof?

- ALSI (Approaches to Learning & Studying Inventory)
  - 36 items with 5 point Likert scale
    - “I’ve often had trouble in making sense of the things I have to remember”
    - “I’ve tried to find better ways of tracking down relevant information on this subject”
  - The ALSI is valid for use in medical students and can uncover interesting relationships between approaches to studying and student characteristics. In addition, the ALSI has potential as a tool to predict student success, both academically and beyond qualification.
Considerations When Developing a Patient Case

Spotlight on the Patient Case: Improving Impactful Learning
What Makes a Good Case?

- Appropriate timing
  - Presented after the learner has collected relevant knowledge
- More than one ‘correct’ answer
- Challenges the learner’s decision making skills
- Requires engaging previously learned material and reconciling it with new information
- Engages by personalizing the scenario
- Fosters independent learning
- Appropriate wrap-up after student-driven case work-up
What Makes a Bad Case?

- Too simplistic
  - Black and white answer – limited discussion
  - An exact replication of previously taught basic knowledge
- Too complex
  - Expectations are unrealistic
    - Not enough time
    - Well above the learner’s abilities
- Not updated
  - Includes outdated products or methods
- Unrealistic scenario
- Promotes individual work
The 4 S’s

...to create accountability and promote discussion in our learners

1. The case should be significant to the student
2. The same problem should be explored by all learners
3. They should be asked to make a specific choice
4. Responses should be reported simultaneously from all teams/participants
Considerations When Developing a Case

- Learning objectives
- Level of the learner
- Time allotment
- Case format
- Pilot testing
- Closing the case
Learning Objectives

- Clear statement of expectations
- Case used to supplement lecture may require separate objectives
Level of the Learner

- What background/foundational material do your learners bring with them?
  - Individual preparedness and accountability
  - Deeper learning through connecting to previous material
- Overly simplistic or complex cases will likely result in loss of your learner’s attention
- What skills should your learner be developing at this point?
Time Allotment

- Directly impacts case complexity and format
- Too little time often leads to ‘divide and conquer’ approach to team activities
- Consider providing select case information prior to team activity for less advanced learners
- Save some time by recycling the problem
  - Alter details of the previously worked case and challenge learners as to how this effects their recommendation
Case Format

- Poor activity or case design accounts for the majority of problems encountered in team activities
- Team tasks should promote discussion
  - Not easily completed by individuals
  - Avoid ‘listing’ activities
- Determine decision points
  - What are the key questions that your learners need to answer?
  - Decision points should be relevant to central concepts or skills that learners need to develop
- Information should be provided in a realistic way
  - Base on actual events when possible
- Be specific
  - Provide enough background for the decision-making process
## Case Format

<table>
<thead>
<tr>
<th>Information Provided</th>
<th>Information Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Single page case</td>
<td>• Responses to targeted questions</td>
</tr>
<tr>
<td>○ Full information vs. missing</td>
<td>• Chart note</td>
</tr>
<tr>
<td>• Patient chart</td>
<td>• Verbal or written specific recommendation</td>
</tr>
<tr>
<td>○ Paper vs. electronic</td>
<td></td>
</tr>
<tr>
<td>• Video</td>
<td></td>
</tr>
<tr>
<td>• Simulation manikins</td>
<td></td>
</tr>
<tr>
<td>• Standardized patient</td>
<td></td>
</tr>
<tr>
<td>○ Volunteers vs. hired</td>
<td></td>
</tr>
</tbody>
</table>
Pilot-Testing

- Helps identify problems before stepping into the classroom
- Testers should be as similar to your learners as possible
- Consider the security of your case
- Revise case as needed
Closing the Case

- Discussion of the case after team work-up is necessary for maximizing learning opportunities
  - Allows for comparisons and discussion across teams
    - Simple provision of a key is not ideal
  - Provides immediate feedback
- Simultaneous reporting is recommended
  - Response cards
  - Poster gallery
- Open-ended questions to have the learner think aloud
  - Questions should guide the learner’s thinking, but not give away too much
- Encourage a dialogue of contrasting approaches
  - Have learners provide ideas, thought processes and justification
Closing the Case

- Avoid intimidation
- Keep the discussion on track
- Verbalize your thought process

High energy closing discussion is a good indication of an effective assignment.
Resource List

SPOTLIGHT ON THE PATIENT CASE: IMPROVING IMPACTFUL LEARNING
Online Resources*

- **MyPACS.net – McKesson Study Share**
  - Cases and images
  - http://www.mypacs.net/mpv4/hss/casemanager

- **A Practical Guide to Clinical Medicine – UCSD**
  - Collection of useful links and resources by topic
  - http://meded.ucsd.edu/clinicalmed/links.htm

- **Virtual Health Care Team – University of Missouri – Columbia, School of Health Professions**
  - Lengthy cases on a variety of topics
  - http://shp.missouri.edu/vhct/studies.htm

- **ClinicalCases.org – University of Chicago and NSU**
  - Case-based curriculum of medicine

*Always check fair use requirements and restrictions for individual sites*
Online Resources*

- **Virtual Patient – Harvard Medical and Beth Israel Deaconess MC**
  - Small case library for use with web-based interactive patients
  - [https://research.bidmc.harvard.edu/VPTutorials/](https://research.bidmc.harvard.edu/VPTutorials/)

- **National Center for Case Study Teaching in Science – University at Buffalo**
  - Peer-reviewed cases classified by subject and student level
  - [http://sciencecases.lib.buffalo.edu/cs/](http://sciencecases.lib.buffalo.edu/cs/)

- **Rx for Change – UCSF**
  - Tobacco cessation materials and cases
  - Video clips of customers and patients
  - [http://rxforchange.ucsf.edu/](http://rxforchange.ucsf.edu/)

*Always check fair use requirements and restrictions for individual sites*
Paid/Subscription Services

- **AccessMedicine and AccessPharmacy cases**
- **MedU**
  - Targeted at schools and colleges of medicine
  - Robust service available for full integration into your course
  - Resources for a variety of different active-learning formats with virtual patients
  - [http://www.med-u.org/](http://www.med-u.org/)
- **Pearson Virtual Case Studies**
  - Video cases in psychology
  - Interactive cases which show results of therapeutic decision
  - [http://mypsychlabint.pearsoncmg.com/](http://mypsychlabint.pearsoncmg.com/)
- **WISE-MD – NYU School of Medicine**
  - Focus on surgical education
  - [http://wise-md.med.nyu.edu/Init.action](http://wise-md.med.nyu.edu/Init.action)
Print Resources

- Casebooks accompanying course text
Additional Tools and Resources

- **Blackboard**
  - Use for timed release of information for cases
  - Assignment upload
  - Submission via quiz
- **Continuing ed resources**
- **Librarian liaison**
- **Colleagues**
Conclusion

- Patient cases in the classroom offer a low-stakes opportunity to develop desirable skills in learners.
- Use of patient cases is generally accepted as a useful approach in the classroom, but the difficulty comes in how success is measured.
- Great care and planning is required to optimize a case-based activity.
- Discussion of the case during development and piloting are essential, especially in the novice instructor.
Activity

- Grab a LARGE post-it (one per team)
- Use one side of the one-sheet handout and answer the questions
  - Option 1: Questions to foster a general discussion about patient cases in the classroom
  - Option 2: Begin design of a patient case
- Your team has 20 minutes for this activity
- Place your large post-it on the wall proudly!
Activity

- Gallery Show!
  - Mingle around and enjoy the work of your colleagues
  - Use the small, yellow post-it notes to leave comments, questions or suggestions on the posters
  - See some innovative ideas? Find a case idea that really impressed you?
    - Feel free to leave compliments!
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Wrap-up
References

- Patterson JS. Increased Student Self-Confidence in Clinical Reasoning Skills Associated with Case-Based Learning (CBL). JVME 2006, 33(3): 426-?
Spotlight on the Patient Case: Improving Impactful Learning

Option 1: General Patient Case Questions

Instructions: Please use the following questions to guide your team activity. Write your brief responses on the large wall post-it provided to your team.

[If your team prefers to start the development of a specific patient case, please use the questions on the back of this sheet instead.]

1. What can you change for your course RIGHT NOW regarding patient cases?

2. What change can you plan for NEXT YEAR regarding patient cases?

3. What are your concerns about incorporating case-based learning (CBL)?

4. For those who have used CBL before:
   a. What do you consider the strengths and weaknesses of CBL in your classroom?
   b. What makes a good or bad case?
   c. What is your favorite CBL resource?
   d. How can you measure or report what you have already done?

5. What resources from today’s presentation could you use in your case development?

Still have time left?

❖ Discuss how you could objectively measure success of CBL in your classroom and design a study for publication.
Spotlight on the Patient Case: Improving Impactful Learning

Option 2: Questions to Start Development of a Patient Case

Instructions: Please use the following questions to guide your team activity. Write your brief responses on the large wall post-it provided to your team.
[If your team prefers not to develop a specific patient case, please use the general questions for discussion of case-based learning on the back of this sheet instead.]

1. What burning question or issue will your case address?
2. What format will your case be presented in?
3. What information will your students get and when?
4. What resources do you need (facilities, personnel, materials, etc.)?
5. How will you format your wrap-up discussion?
6. What resources from today’s presentation could you use in your case development?

Still have time left?

▶ Use the map below (or any other preferred format) to begin drafting your case.