Facilitating Active Learning in Large Lecture Courses: The Flipped Method

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Session Outline
• Brief introduction to the flipped method.
• Personal experience with flipping a large lecture course.
  ▪ Video lecture considerations
  ▪ Impact on students and instructor
• Tools to facilitate flipping a large lecture course.
  ▪ Video production tools
  ▪ Case resources
• Discussion/Questions

The Flipped Method

The Traditional Classroom
Teacher is the focus of the lecture

The Flipped Classroom
Students watch video lectures at home
Lecture time is used for active learning

www.knewton.com/flipped-classroom
Tackling the Flipped Method in a Large Lecture Course

- Introductory Biology I for majors
- Two sections: 200 students and 250 students
- Large auditorium lecture hall

Strategy:
- Record lecture for the students to view prior to coming to class.
- Do case study during class using PowerPoint and classroom response system (clickers).

Tools for Video Production

- Lecture Capture Software
  - Echo360
  - Panopto

Echo360 Student Interface
Tools for Video Production

- Lecture Capture Software
  - Echo360
  - Panopto
- Presentation Apps for iPad
  - Doceri
  - Explain Everything

A good video....

- is engaging.
- is tied to specific learning objective.
- can be easily accessed and viewed by students.
- doesn’t necessarily have to be made by you!
- is short.
Case Study Resources

Impact on Students

Response Rate: 412/446

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>This case study helped me to better understand the concepts of enzyme function and inhibition.</td>
<td>47%</td>
<td>39%</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>I enjoyed learning about biology concepts through a case study.</td>
<td>60%</td>
<td>27.5%</td>
<td>9.5%</td>
<td>1.5%</td>
</tr>
<tr>
<td>I would like to do more clicker cases in this course.</td>
<td>64%</td>
<td>21.5%</td>
<td>9%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Impact on Students

“The case study portion of the class was wonderful.”

“I really enjoyed the case studies. I liked them because it allowed me to apply the information I learned in class and understand it on a deeper level.”

“The case studies were fun!”

“Case studies are an excellent idea to further engage the students in the course.”

“I really enjoyed the case studies because it gave a different medium to learn the material throughout the course.”
Final Remarks

- Start small
- Get student buy-in
- Manage time
- Seek and offer support

- Questions? Comments?
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Sources for Case Studies

<table>
<thead>
<tr>
<th>Source</th>
<th>Link</th>
<th>Disciplines</th>
<th>Peer-Reviewed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Center for Case Study Teaching in Science</td>
<td><a href="http://sciencecases.lib.buffalo.edu/cs/collection/">http://sciencecases.lib.buffalo.edu/cs/collection/</a></td>
<td>All science disciplines including graduate/clinical - many cases also have social science, behavioral &amp; humanities perspectives</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Pittsburg - Dept. of Pathology</td>
<td><a href="http://path.upmc.edu/cases.html">http://path.upmc.edu/cases.html</a></td>
<td>Pathology</td>
<td></td>
</tr>
<tr>
<td>UCLA Statistics Case studies</td>
<td><a href="http://www.stat.ucla.edu/cases/">http://www.stat.ucla.edu/cases/</a></td>
<td>Statistics</td>
<td></td>
</tr>
<tr>
<td>University of Washington School of Public Affairs</td>
<td><a href="http://hallway.evans.washington.edu/">http://hallway.evans.washington.edu/</a></td>
<td>Public Policy (including health/healthcare)</td>
<td>Yes</td>
</tr>
<tr>
<td>ShiPS Resource Center at University of Minnesota</td>
<td><a href="http://www1.umn.edu/ships/modules/index.htm">http://www1.umn.edu/ships/modules/index.htm</a></td>
<td>Sociology, History and Philosophy of Science</td>
<td></td>
</tr>
<tr>
<td>National League for Nursing</td>
<td><a href="http://www.nln.org/facultyprograms/facultyresources/aces/unfolding_cases.htm">http://www.nln.org/facultyprograms/facultyresources/aces/unfolding_cases.htm</a></td>
<td>Nursing Cases</td>
<td></td>
</tr>
<tr>
<td>American Sociological Association</td>
<td><a href="http://www.asanet.org/ethics/detail.cfm?id=all">http://www.asanet.org/ethics/detail.cfm?id=all</a></td>
<td>Sociology/Ethics</td>
<td></td>
</tr>
<tr>
<td>Rutgers Resources-Master Educator’s Guild</td>
<td><a href="http://meg.rbhs.rutgers.edu/cte/active_learning/active_case_based_learning.html">http://meg.rbhs.rutgers.edu/cte/active_learning/active_case_based_learning.html</a></td>
<td>Several links to case study sites/repositories- variety of disciplines</td>
<td></td>
</tr>
<tr>
<td>University of Missouri School of Health Professions</td>
<td><a href="http://shp.missouri.edu/vhct/studies.htm">http://shp.missouri.edu/vhct/studies.htm</a></td>
<td>Medical cases in diverse specialties/disease areas</td>
<td></td>
</tr>
</tbody>
</table>
Assorted Literature on Case Studies

1. Rutgers Biomedical and Health Sciences Center for Teaching Excellence: http://meg.rbhs.rutgers.edu/cte/active_learning/active_case_based_learning.html
   In addition to linking to case studies, also links to articles on writing, teaching, and evaluating case studies.
   (A comprehensive collection of articles on teaching, writing, assessment, etc.)

Assorted Literature on the Flipped Method

Explain Everything

• Interactive whiteboard useful for creating instructional videos, tutorials, and lectures.
• Add powerpoint slides, pictures, videos, and documents. Narrate and annotate to create a multidimensional presentation.
• Export movie files to Dropbox, YouTube, Google Drive, iTunes, and more for sharing.

Write or draw
Type in a textbox
Insert an object
Delete an object
Use a laser pointer
Select ink color
Add a new slide
Record audio
Export image
Export movie
To Start

To Control

Start a new file

What you see

What students see

Go to previous/next page

Stop mark

Page mark

Go to previous/next stroke

Record video

Add/remove page mark

Go to previous/next page

Stop mark

Add/remove stop mark

Go to previous stop mark

Stop mark

Stop mark

Stop mark

Undo and redo

Colors and shapes

Insert pictures

Share/upload

Also can:

Press and hold to select/cut/copy/paste