Landing on Your Feet in the Flipped Classroom

Creating New Learning Environments

David Julian

The “flipped” classroom

Inverting the Classroom: A Gateway to Creating an Inclusive Learning Environment

Maureen J. Lage, Glenn J. Platt, and Michael Treglia

Recent evidence has shown that a mismatch between an instructor’s teaching style and a student’s learning style can result in the student learning less and being less interested in the subject matter (Borg and Shapirom 1996; Ziegert forth-

The “flipped” classroom

• Videos take the place of direct instruction.
• Students get individual time in class to work with their teacher on key learning activities.
• What was classwork (the “lecture”) is done at home, and what was homework (assigned problems) is now done in class.

What a flipped classroom should be

• Increased interaction and personalized contact time
• Students take responsibility for learning
• All students are engaged in their learning
• Teacher is “guide on the side” not “sage on the stage”
• Blending of direct instruction with constructivist learning
• All content is archived for review or remediation
What a flipped class is not

- A synonym for online videos.
- About replacing teachers with videos.
- An online course.
- Students working without structure.
- Students working in isolation or solely at a computer screen.

Haven’t I seen this before?

- Problem-based Learning
  - Active Learning
  - Blended Learning
- Educational Vodcasting
  (e.g., Bergman and Sams ca. 2006)
- Reverse Instruction
  - Pre-teaching
- The Khan Academy
Powering the Flipped Classroom

Course Activities

Passive Learning

Lectures

Reading

Problem-solving

Discussion

Active Learning
Learning Activity Hierarchy

Traditional Course Format

- Homework
- Textbook
- Lectures

Outside of class

In class
Learning Activity Hierarchy

Flipped Course Format

Lessons
Interactive Online Content
Peer Instruction
In-Class Problems

Outside of class
In class
Resource Allocation

Traditional Lecture
- Home: 75%
- Class: 25%

Flipped Class
- Home: 25%
- Class: 75%

Where can you start?
Digitizing your “lectures”

• Lecture capture of your current presentations
  – Camtasia Relay, Echo 360

Digitizing your “lectures”

• Lecture capture of your current presentations
• Narrated slides (screencast)
  – PowerPoint
  – Camtasia Studio
  – Adobe Presenter
Digitizing your “lectures”

- Lecture capture of your current presentations
- Narrated slides (screencast)
- You and your slides
  - Adobe Presenter
  - CITT-produced video

Uploading your digitized lectures

- **Campus learning management system (LMS)**
  - Sakai (e.g., in Resources folder)
  - Other LMS (e.g., Moodle)
- **To external servers**
  - Camtasia Relay
  - YouTube
  - Vimeo
  - iTunes U
Creating interactive online content

• E-Learning authoring tools
  — Adobe Presenter
  — Adobe Captivate
  — Articulate Studio Suite
  — SoftChalk Create

But there’s a problem...
Interactive e-learning content is typically packaged in SCORM format, which cannot currently be used in Sakai at UF
  — Moodle
  — Private e-learning hosts (e.g., Articulate, Educadium)

• FERPA issues?
Engaging students in the classroom

• Low-tech methods
  (raising hands, colored cards, etc.)

• Student response systems (“Clickers”)
  – TurningPoint
  – i>clicker
  – H-iTT

• Tablet/laptop/smartphone
  – LectureTools, Via Response, ResponseWare, etc.

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BYOD: What happens when every student brings a laptop/tablet to class?

Deliberate Engagement of Laptops in Large Lecture Classes to Improve Attentiveness and Engagement

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Abstract

The value of in-class Internet technologies to student attentiveness, engagement, and learning remains both controversial and filled with promising potential. In this study, students were given the option to use LectureTools, an interactive suite of tools designed specifically for large classes. The availability of these tools dramatically changed the mechanics of the course as over 90% of students attending lectures...
LectureTools

A hierarchical framework is made up of:
- A mixture of ideas and principles
- A series of factors that have influenced the design
- Principles that are the core of the design
- The essence of the design

Match these events in the chronological order:
1. First class off
2. Exam - Data Summary
3. Exam - Lecture Cations
4. Andrew Wilson is named as president

A valid, reliable, and applicable clinical practice guideline becomes an essential component of the clinical educational setting.
Via Response

Multiple Choice

Assume that a vertebrate has a musculoskeletal joint as indicated in the diagram at left. If the animal maintains the distal bone horizontal at 90° while suspending a 10 N mass, as indicated in the diagram at right, what force must be generated by the muscle at its insertion point (blue arrow)?

A. 1 N  
B. 9 N  
C. 10 N  
D. 11 N  
E. 100 N

Via Response
Teaching Physiology in a Flipped Format

The Evolution of PCB 4723C

The evolution of Animal Physiology

<table>
<thead>
<tr>
<th></th>
<th>Traditional</th>
<th>Transitional</th>
<th>Online Only</th>
<th>Blended</th>
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</thead>
<tbody>
<tr>
<td>Enrollment</td>
<td>Up to 64</td>
<td>100-250</td>
<td>100-150</td>
<td>150</td>
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<tr>
<td>Lecture Periods</td>
<td>Face-to-face lectures</td>
<td>Face-to-face lectures</td>
<td>None</td>
<td>Active learning problems, peer instruction</td>
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<tr>
<td>Laboratory/Discussion</td>
<td>Wet labs</td>
<td>Tutored simulations</td>
<td>None</td>
<td>Paper discussions</td>
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<tr>
<td>Homework</td>
<td>None</td>
<td>None</td>
<td>Digital lessons, simulation tutorials, quizzes, group project</td>
<td>Digital lessons, simulation tutorials</td>
</tr>
</tbody>
</table>
Physiology simulation software

Arthur Guyton’s computer model of the cardiovascular system


Physiology simulation software

HumMod: 5400 variables, freely distributed
Captivate

Incentivizing participation

Points for everything!

- In-class questions: 20%
- Discussions: 10%
- Presentations: 10%
- Tutorials: 10%
- Exams: 50% (2 @ 25%)