Using Technology to Promote and Assess Active Learning

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Objectives

At the end of this participants should be able to:

- Describe technology options to support active learning
- Choose appropriate tool to support a pedagogical goal
- Relate specific social media tools to Bloom’s taxonomy verbs
First

- What is “Active Learning?”
Active Learning

- LCME definition
  - A medical education program must include instructional opportunities for **active learning and independent study** to foster the skills necessary for lifelong learning
  - ... self-assessment on learning needs; the independent identification, analysis, and synthesis of relevant information; and the appraisal of the credibility of information sources. Medical students should receive explicit experiences in using these skills, and they should be assessed and receive feedback on their performance.
Bonwell and Eison (1991) in their report for the Association for the Study of Higher Education

“(Students) must read, write, discuss, or be engaged in solving problems. Most important, to be actively involved, students must engage in such higher-order thinking tasks as analysis, synthesis, and evaluation. Within this context, it is proposed that strategies promoting active learning be defined as instructional activities involving students in doing things and thinking about what they are doing.”
Flipping the classroom

- **Flip teaching** (or flipped classroom) is a form of blended learning which encompasses any use of technology to leverage the learning in a classroom, so a teacher can spend more time interacting with students instead of lecturing.
Example

- Define a discrete concept
  - “passing a vehicle,” not “driving a car”
- Define the learning objective
  - “identify when it is safe to pass”
  - “illustrate scenarios where passing is not allowed”
Objective-activity-tool

“Identify when it is safe to pass”

- Traditional: Lecture or reading with quiz
- Cutting edge: Game that shows safe and unsafe passing opportunities with student deciding whether to pass
- Opportunity: Online learning module with in-class clicker exercise
Objective-activity-tool

“Illustrate scenarios where passing is not allowed”

- Traditional: Small group where facilitator directs conversation
- Cutting edge: Immersive environment where a student must design a roadway that is unsafe for passing
- Opportunity: Have students post news report (story/picture/video) of unsafe passing scenario to wiki
Bloom’s Taxonomy

Create
Evaluate
Analyze
Apply
Understand
Remember
What people are doing

**Creators** publish Web pages, write blogs, upload videos to sites like YouTube.

34%    37%    30%    19%    12%    7%    5%

**Critics** comment on blogs and post ratings and reviews.

24%    37%    34%    25%    18%    15%    11%

**Collectors** use Really Simple Syndication (RSS) and tag Web pages to gather information.

11%    16%    18%    16%    15%    16%    11%

**Joiners** use social networking sites.

51%    70%    57%    29%    15%    8%    6%

**Spectators** read blogs, watch peer-generated videos, and listen to podcasts.

49%    59%    54%    41%    31%    26%    19%

**Inactives** are online but don’t yet participate in any form of social media.

34%    17%    21%    42%    54%    61%    70%

Who participates (U.S. online users)

Data: Forrester Research
Tools in the cloud – Social Media

- Wiki
- Blog
- Social Bookmarking
Wikis

- Web-based application that is used to create collaborative content
- Many to many relationship
- Applications include Pbwiki, WikiSpaces
- Designed around content
- Used for group projects, knowledge base
- Grading Rubric: group grade, individual contribution, collaboration
Blogs

- Web-based application that allows easy content publication and commenting
- Usually a one to many relationship
- Applications include: Blogger, WordPress, Tumblr, Weebly
- Posted/design chronologically
- Used for journals, lab notebooks
- Grading Rubric: Collaboration, contribution, timeliness
**Latest Story**

**Nature Scitable Bloggers Update**

2011/10/12

By Ms Baker

We’re busy working on our presentation for the Science Online conference in January! We had a wonderful meeting on Columbus Day to talk about how we can improve our blogging and make our presentation at the conference different than years past. Be sure to check out the Nature Scitable bloggers most recent posts! Naseem...

**Extreme Biology 2010-11 Reflections and Future**

2011/06/06

By Ms Baker

**Is Man’s Best Friend a Pessimist?**

2011/06/06

By Gabriela

**Was this Football Tragedy Preventable?**

2011/06/06

By Deirdre

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**RECENT COMMENTS**

Axelreder71194

Awesome post Noa! I never knew the music was such an essential part of our being. Well I did some research and I found a ted talk about how music effects people. This ted talk proved that humans...

The Biology of Music · 10 months ago

Lauren

Thank you so much for the advise. I will definitely use it in my classroom!

Extreme Biology 2010-11 Reflections and Future · 10 months ago

Tove Rosenberg

This is an old thread but noone seems to have mentioned this one so
Social Bookmarking

- Web application that allowing for the aggregation of web references – usually news articles
- One to many relationship
- Applications include: Reddit, Digg, CiteULike
- Uses: Peer experts, virtual journal club, literature review
- Grading Rubric: peer evaluation, expert assessment
Articles discussing: pharmacology

✓ Quantitative pharmacology or pharmacokinetic pharmacodynamic integration should be a vital component in integrative pharmacology.
The *Journal of pharmacology and experimental therapeutics*, Vol. 331, No. 3 (December 2009), pp. 757-774, [doi:10.1124/jpet.109.157172](http://doi.org/10.1124/jpet.109.157172)
by J. Gabrielson, A. R. Green
posted to *pharmacology* by *desouthan* on 2012-02-20 08:37:53 ★★
- Abstract

✓ Training in systems pharmacology: predoctoral program in pharmacology and systems biology at Mount Sinai School of Medicine.
The *Clinical pharmacology and therapeutics*, Vol. 88, No. 1 (July 2010), pp. 19-22, [doi:10.1038/clpt.2010.41](http://doi.org/10.1038/clpt.2010.41)
by E. A. Sabie, S. L. Jenkins, R. Iyengar, T. A. Kulpich
posted to *pharmacology systems biology* by karthikraman on 2010-06-24 08:15:10 ★★
- Abstract

✓ Analytical pharmacology: the impact of numbers on pharmacology.
by Terry Kunkel, Arthur Christopoulos
posted to *pharmacology* by fibarose on 2011-08-08 16:26:22 ★★ along with 1 person
- Abstract

✓ International Union of Pharmacology. XXXIX. Compendium of voltage-gated ion channels: sodium channels.
posted to *canales* by *Neophytou* on 2011-08-25 12:14:45 ★★
- Abstract

✓ Pharmacology of Nicotine: Addiction, Smoking-Induced Disease, and Therapeutics.
by Neal L. Benowitz
posted to *dependence nicotine pharmacology* by *nelfaracy* on 2009-06-21 11:30:57 ★★ along with 2 people
- Abstract

✓ Volume 159 Issue 4, British Journal of Pharmacology. Special Issue: Themed Section: Imaging in Pharmacology
edited by A. R. Daveyport, C. Daly
posted to *imaging pharmacology* by *Reohidum* on 2010-02-24 12:27:51 ★★★
- Abstract

✓ G protein-coupled receptor dimerization: function and ligand pharmacology.
by Graeme Milligan
posted to *dimerization function g-protein ligand pharmacology testexport* by *ex274* on 2010-10-21 16:52:06 ★★ along with 4 people and 2 groups
- Abstract

✓ Clinical pharmacology and malaria
by A. M. Breckenridge, P. A. Winstanley
posted to *pharmacology* by *nelfaracy* on 2009-05-18 23:22:25 ★★
Tools at hand

- Learning platform (LMS, CMS, KMS)
  - Quizzes
  - Discussion Boards
  - Assignments
  - Blogs
  - Wikis
  - Module creator
  - Audience response system
Tools in the Cloud – Content

- **Asset Repositories**
  - MedEd Portal
  - MERLOT
  - Khan Academy

- **Publishing platforms**
  - Prezi
  - SoftChalk
  - Educreations
Final thought

- Look for an opportunity
  - Single, discrete measurable concept
  - Think visually

- Don’t go too big
  - Separate learning tool and assessment
  - Start with a pilot

- Establish the rubric
  - Don’t devalue independent learning
  - Change face-to-face experience
Resource

- http://edorigami.wikispaces.com/