
Using Technology to Promote and Assess Active Learning

Jill Jemison

University of Vermont
College of Medicine

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
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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.
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Active Learning Redux

- 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.”
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“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.
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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
-

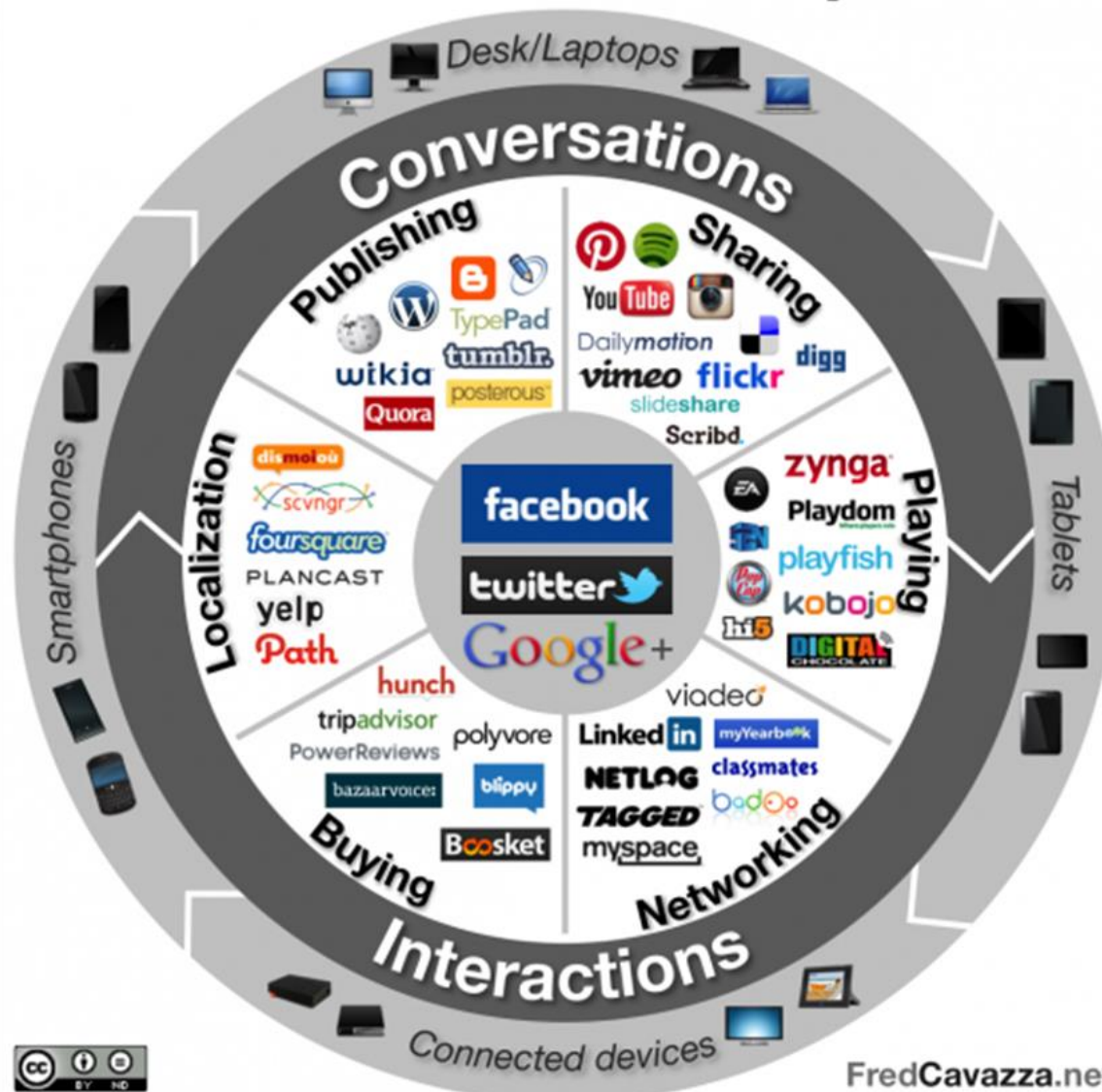
Objective-activity-tool

- “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
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Bloom's Taxonomy



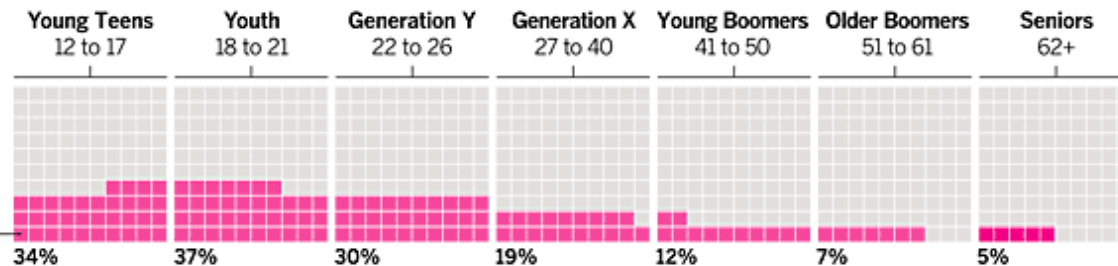
Social Media Landscape 2012



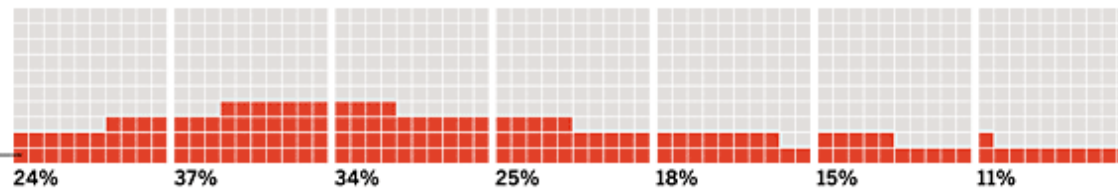
What people are doing

Who participates (U.S. online users)

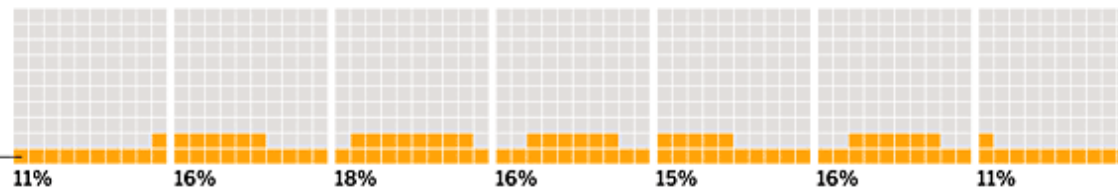
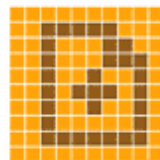
Creators publish Web pages, write blogs, upload videos to sites like YouTube.



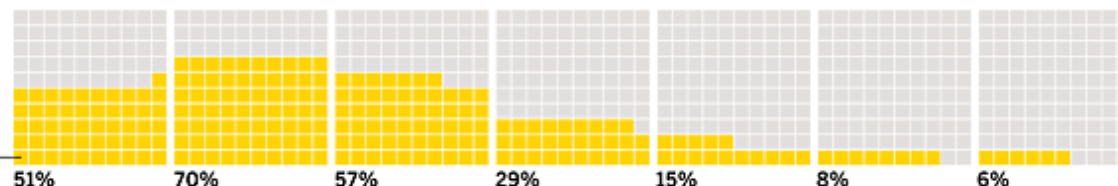
Critics comment on blogs and post ratings and reviews.



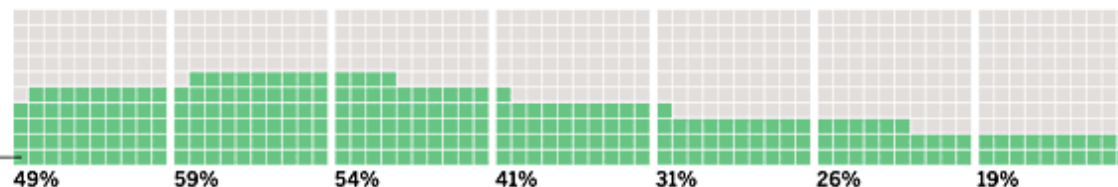
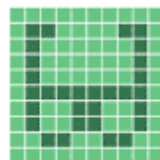
Collectors use Really Simple Syndication (RSS) and tag Web pages to gather information.



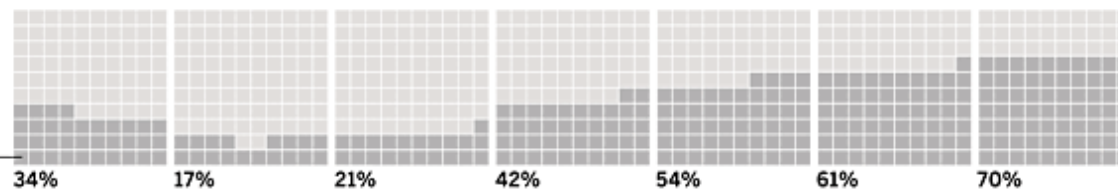
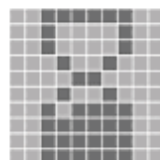
Joiners use social networking sites.



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



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



Data: Forrester Research

CHART BY ARNO GHELFI

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
-

You are not a member of this wiki. [Join now](#) [Dismiss](#)

guest



Biochemistry-Project

- 🏠 Wiki Home
- 📅 Recent Changes
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🔍 Search Wiki

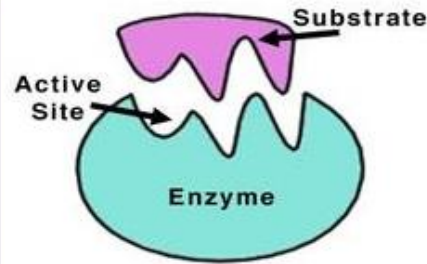
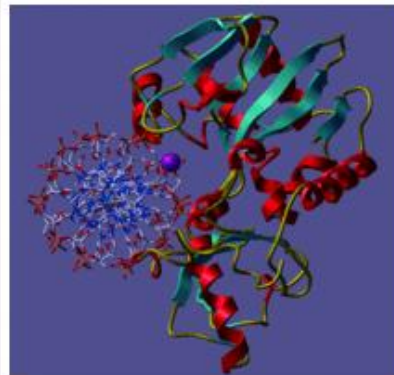
- ▼ All Pages
 - home
 - Post Project Quiz
 - Project Rubric

- Amino Acids and DNA
- Biomolecules
- Immune Response
- Neurochemistry and Disorders
- Steroids

edit navigation

home

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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
-



Home

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Latest Story

Nature Scitable Bloggers Update

2011/10/12

By Ms Baker



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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



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A

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RECENT COMMENTS



Alexandra71194

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

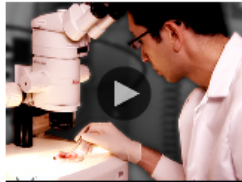
This is an old thread

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
-



Watch Method Videos JoVE

- [HEIRS Cellular Biology](#)
- [HEIRS Immunology and Autoimmune Diseases](#)
- [WetBiology](#)
- [Structural Biology Group TorVergata](#)
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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. 767-774, [doi:10.1124/jpet.109.157172](https://doi.org/10.1124/jpet.109.157172)

by [J. Gabrielsson](#), [A. R. Green](#)

posted to [pharmacology](#) by [cdsouthan](#) 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.**

Clinical pharmacology and therapeutics, Vol. 88, No. 1. (July 2010), pp. 19-22, [doi:10.1038/clpt.2010.41](https://doi.org/10.1038/clpt.2010.41)

by [E. A. Sobie](#), [S. L. Jenkins](#), [R. Iyengar](#), [T. A. Krulwich](#)

posted to [pharmacology](#) [systems_biology](#) by [karthikraman](#) on 2010-06-24 08:15:10 ★★

■ [Abstract](#)

✓ **Analytical pharmacology: the impact of numbers on pharmacology.**

Trends in pharmacological sciences, Vol. 32, No. 4. (10 April 2011), pp. 189-196, [doi:10.1016/j.tips.2011.01.002](https://doi.org/10.1016/j.tips.2011.01.002)

by [Terry Kenakin](#), [Arthur Christopoulos](#)

posted to [pharmacology](#) by [fbarroso](#) 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.**

Pharmacological reviews, Vol. 55, No. 4. (December 2003), pp. 575-578, [doi:10.1124/pr.55.4.7](https://doi.org/10.1124/pr.55.4.7)

by [William A. Catterall](#), [Alan L. Goldin](#), [Stephen G. Waxman](#), [International Union of Pharmacology](#)

posted to [canales](#) by [fisiopatologia](#) on 2011-08-23 22:14:46 ★★

■ [Abstract](#)

✓ **Pharmacology of Nicotine: Addiction, Smoking-Induced Disease, and Therapeutics.**

Annual review of pharmacology and toxicology (3 October 2008), [doi:10.1146/annurev.pharmtox.48.113006.094742](https://doi.org/10.1146/annurev.pharmtox.48.113006.094742)

by [Neal L. Benowitz](#)

posted to [dependence](#) [nicotine](#) [pharmacology](#) by [nelfararq](#) on 2009-06-21 11:38:57 ★★ [along with 2 people](#)

■ [Abstract](#)

✓ **Volume 159 Issue 4, British Journal of Pharmacology. Special Issue: Themed Section: Imaging in Pharmacology**

British Journal of Pharmacology, Vol. 159, No. 4. (February 2010)

edited by [A. P. Davenport](#), [C. Daly](#)

posted to [imaging_pharmacology](#) by [Rohdium](#) on 2010-02-24 12:27:51 ★★★★★

✓ **G protein-coupled receptor dimerization: function and ligand pharmacology.**

Molecular pharmacology, Vol. 66, No. 1. (1 July 2004), pp. 1-7, [doi:10.1124/mol.104.000497](https://doi.org/10.1124/mol.104.000497)

by [Graeme Milligan](#)

posted to [dimerization](#) [function](#) [g-protein](#) [ligand](#) [pharmacology](#) [testexport](#) by [av74](#) on 2010-10-21 18:52:08 ★★ [along with 4 people and 2 groups](#)

■ [Abstract](#)

✓ **Clinical pharmacology and malaria**

Annals of Tropical Medicine and Parasitology, Vol. 91, No. 7. (1997), pp. 727-734, [doi:10.1080/00034989760464](https://doi.org/10.1080/00034989760464)

by [A. M. Breckenridge](#), [P. A. Winstanley](#)

posted to [pharmacology](#) by [nelfararq](#) 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/>