

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's Role: Sage on the Stage
LECTURE TODAY

The Flipped Classroom: Teacher's Role: Guide on the Side
ACTIVITY TODAY

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).

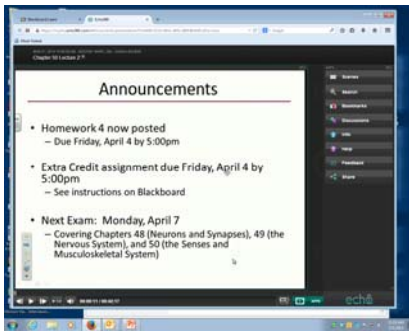


http://commons.wikimedia.org/wiki/File:Weinstock_Lecture_Hall.JPG by Hobicat93

Tools for Video Production

- Lecture Capture Software
 - Echo360
 - Panopto

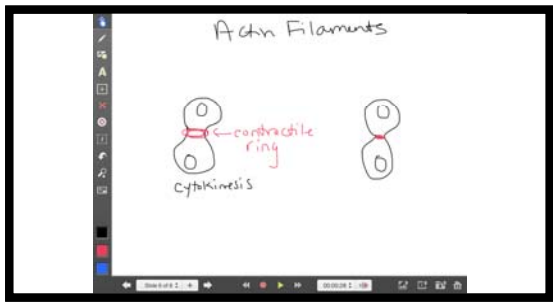
Echo360 Student Interface



Tools for Video Production

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

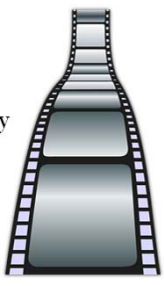
Write and draw with Explain Everything



The screenshot shows a digital whiteboard interface. At the top, it says 'Write and draw with Explain Everything'. Below that is a drawing of two cells in the process of cytokinesis. The cells are represented by circles with a red ring between them. Labels include 'Actin Filaments' at the top, 'contractile ring' pointing to the red ring, and 'cytokinesis' at the bottom. A toolbar with various drawing tools is visible on the left side of the whiteboard.

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	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
This case study helped me to better understand the concepts of enzyme function and inhibition.	47%	39%	10%	2%	2%
I enjoyed learning about biology concepts through a case study.	60%	27.5%	9.5%	1.5%	1.5%
I would like to do more clicker cases in this course.	64%	21.5%	9%	3%	2.5%

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

Source	Link	Disciplines	Peer-Reviewed?
National Center for Case Study Teaching in Science	http://sciencecases.lib.buffalo.edu/cs/collection/	All science disciplines including graduate/clinical - many cases also have social science, behavioral & humanities perspectives	Yes
Centers for Disease Control Epidemiologic Case Studies	http://www.cdc.gov/epicasestudies/	Epidemiology/Public Health	
University of Pittsburg - Dept. of Pathology	http://path.upmc.edu/cases.html	Pathology	
UCLA Statistics Case studies	http://www.stat.ucla.edu/cases/	Statistics	
University of Washington School of Public Affairs	http://hallway.evans.washington.edu/	Public Policy (including health/healthcare)	Yes
ShiPS Resource Center at University of Minnesota	http://www1.umn.edu/ships/modules/index.htm	Sociology, History and Philosophy of Science	
National League for Nursing	http://www.nln.org/facultyprograms/facultyresources/aces/unfolding_cases.htm	Nursing Cases	
American Sociological Association	http://www.asanet.org/ethics/detail.cfm?id=all	Sociology/Ethics	
Rutgers Resources-Master Educator's Guild	http://meg.rbhs.rutgers.edu/cte/active_learning/active_case_based_learning.html	Several links to case study sites/repositories- variety of disciplines	
University of Missouri School of Health Professions	http://shp.missouri.edu/vhct/studies.htm	Medical cases in diverse specialties/disease areas	
U.S. Pharmacist Case Study Challenge	http://www.uspharmacist.com/case_study/	Pharmacy	

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.
2. Herreid, C.F. (Ed.) (2007). *Start with a story. The case study method of teaching college science*. Arlington, VA: National Science Teachers Association.
(A comprehensive collection of articles on teaching, writing, assessment, etc.)
3. Barnes, L.B., Christensen, C.R., and Hansen, A.J. (1994). *Teaching and the case method* (3rd ed.). Boston, MA: Harvard Business School Press.
4. Herreid CL. The Future of Case Study Teaching in Science. University at Buffalo http://www.ccce.divched.org/sites/www.ccce.divched.org/files/p1_herreid.pdf
5. Herreid CL. ConfChem Conference on Case-Based Studies in Chemical Education: The Future of Case Study Teaching in Science <http://pubs.acs.org/doi/pdf/10.1021/ed2008125>
6. Herreid CF. "Clicker" Cases: Introducing Case Study Teaching Into Large Classrooms. (2006) <http://sciencecases.lib.buffalo.edu/cs/pdfs/Clicker%20Cases-XXXVI-2.pdf>
7. Herreid, C.F. 2004. Can case studies be used to teach critical thinking? *Journal of College Science Teaching* 33(6): 12-14.
8. Ribbens, E. 2006. Teaching with jazz: Using multiple cases to teach introductory biology. *Journal of College Science Teaching* 36(2): 10-15.
9. Tanner, C.A. 2009. The case for cases: A pedagogy for developing habits of thought. *Journal of Nursing Education* 48(6): 299-300.

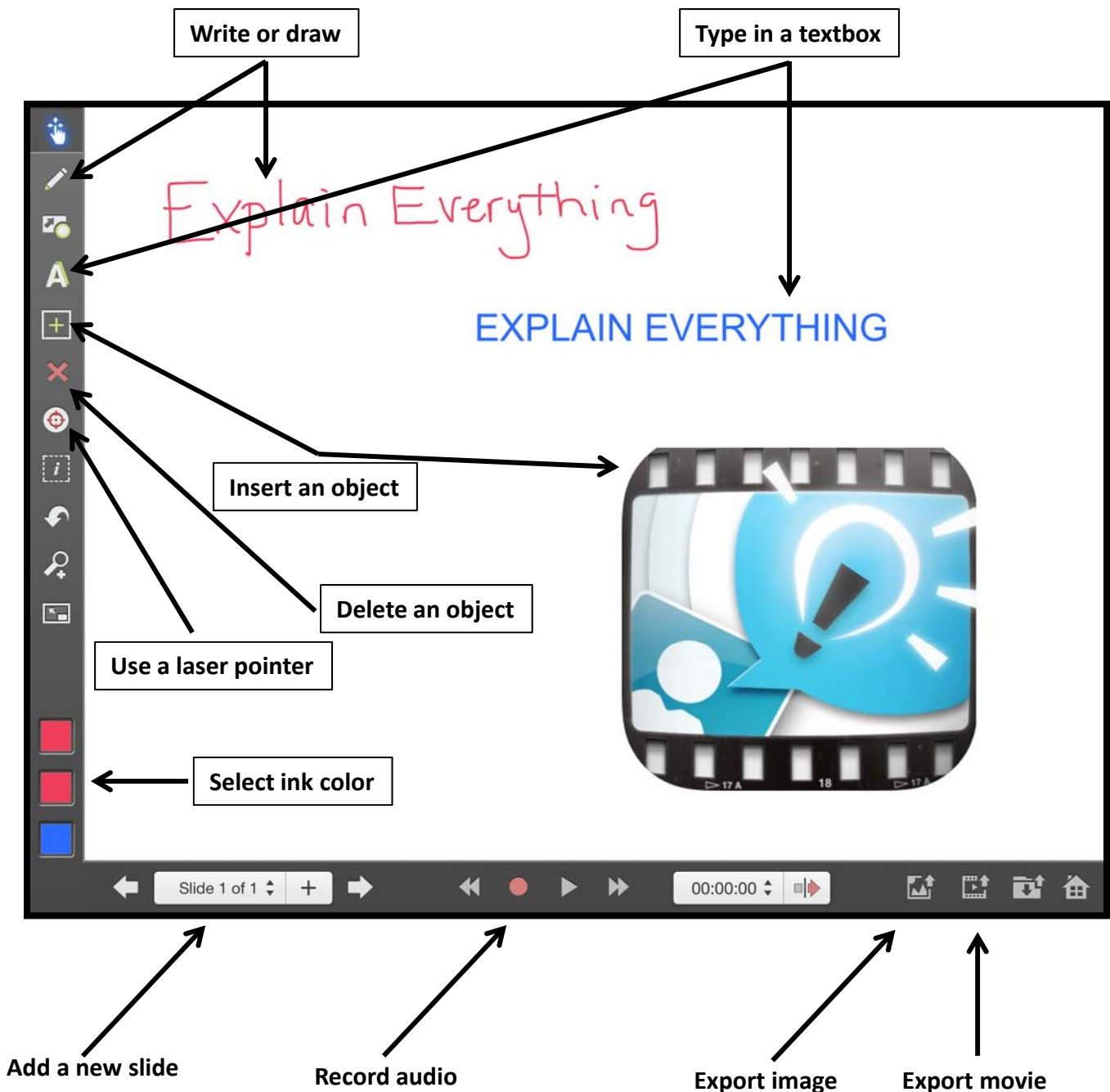
Assorted Literature on the Flipped Method

1. Jensen, J.L., Kummer, T.A., and Godoy, P.D. 2015. Improvements from a flipped classroom may simply be the fruits of active learning. *CBE Life Sciences Education* 14(1): ar5.
2. Gilboy, M.B., Heinerichs, S., Pazzaglia, G. (2014). Enhancing student engagement using the flipped classroom. *Journal of Nutrition Education and Behavior* 47(1): 109-114.
3. Moraros, J., Islam, A., Yu S., Banow, R., & Schindelka, B. (2015). Flipping for success: evaluating the effectiveness of a novel teaching approach in a graduate level setting. *BMC Medical Education* 28(15): 27.
4. Leung, J.Y., Kumta, S.M., Jin, Y., & Yung, A.L. (2014). Short review of the flipped classroom approach. *Medical Education*, 48(11): 1127.
5. Moffett, J. (2015). Twelve tips for "flipping" the classroom. *Medical Teacher*, 37(4): 331-336.

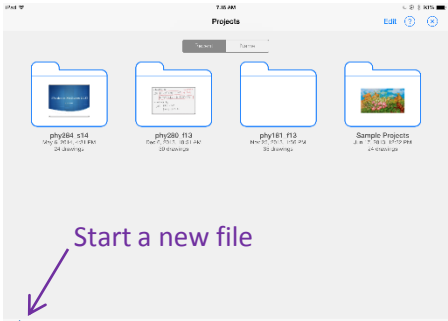


Explain Everything

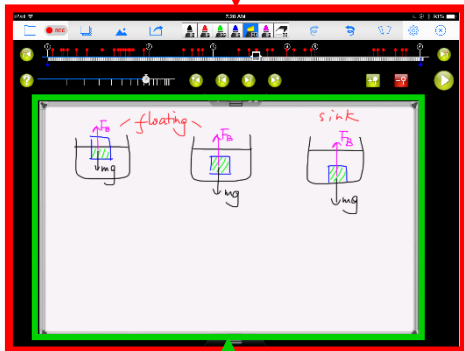
- Interactive whiteboard useful for creating instructional videos, tutorials, and lectures.
- Add powerpoint slides, pictures, videos, and documents. Narrate and annotate to create a multidimensional presentation.
- Export movie files to Dropbox, YouTube, Google Drive, iTunes, and more for sharing.



To Start

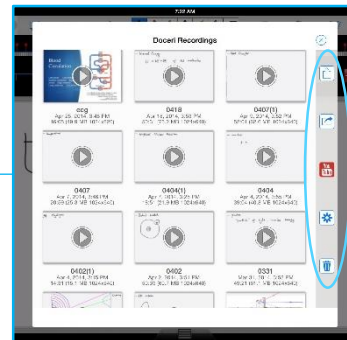
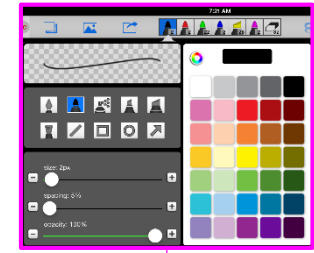
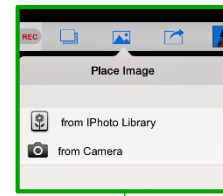
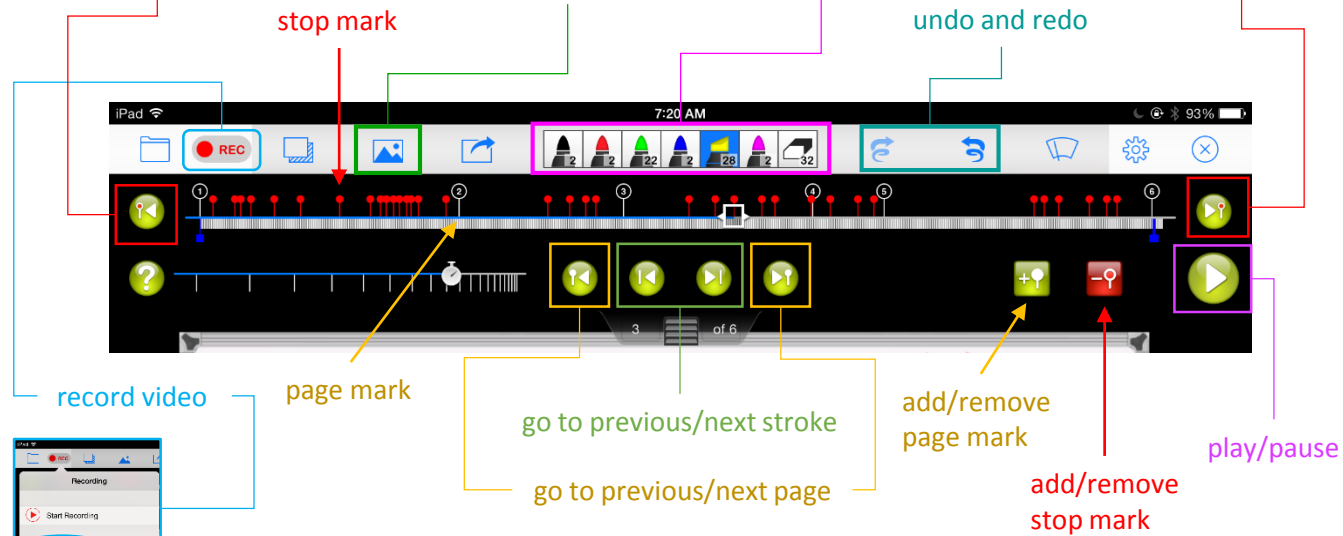


What you see



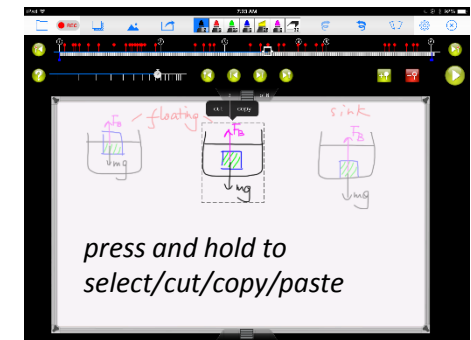
What students see

To Control



share/upload

also can



press and hold to select/cut/copy/paste