

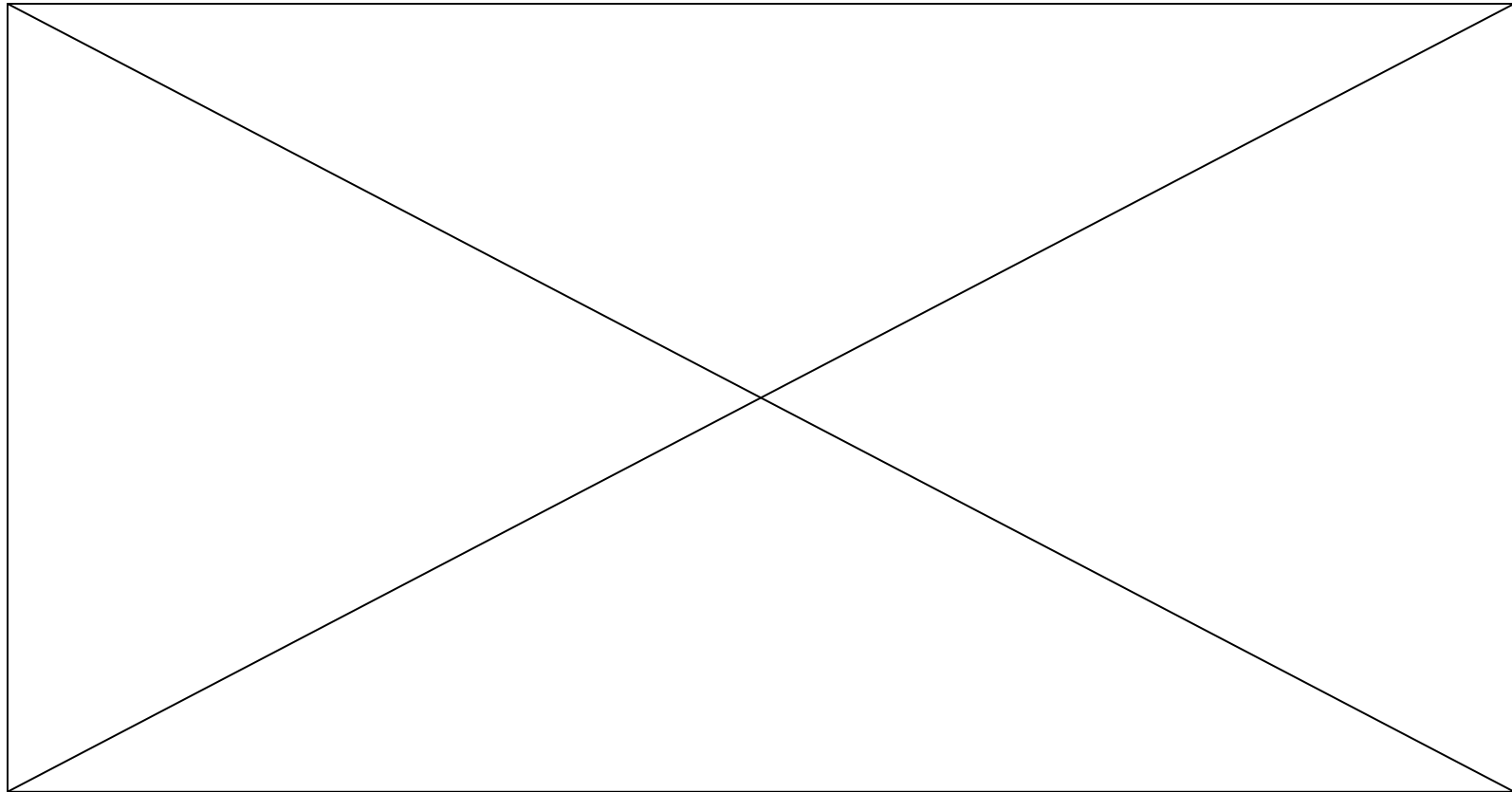
Flipping Your Classroom: A Ticket to Increased Classroom Collaboration?

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Introduction to CTL Services



Link: <http://www.youtube.com/watch?v=lbAzOpCAVgk>



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Who We Are and How We Can Help!

- One director
- Four associate directors specializing in:
 - peer consultation programs
 - assessment
 - educational technology
 - writing
- Four educational developers specializing in:
 - course design
 - teaching & learning research
 - educational technology
 - blended/online learning
- Faculty associates
- Technical support and services staff
- Administrative staff
- A network of connections across campus

ctl@ualberta.ca



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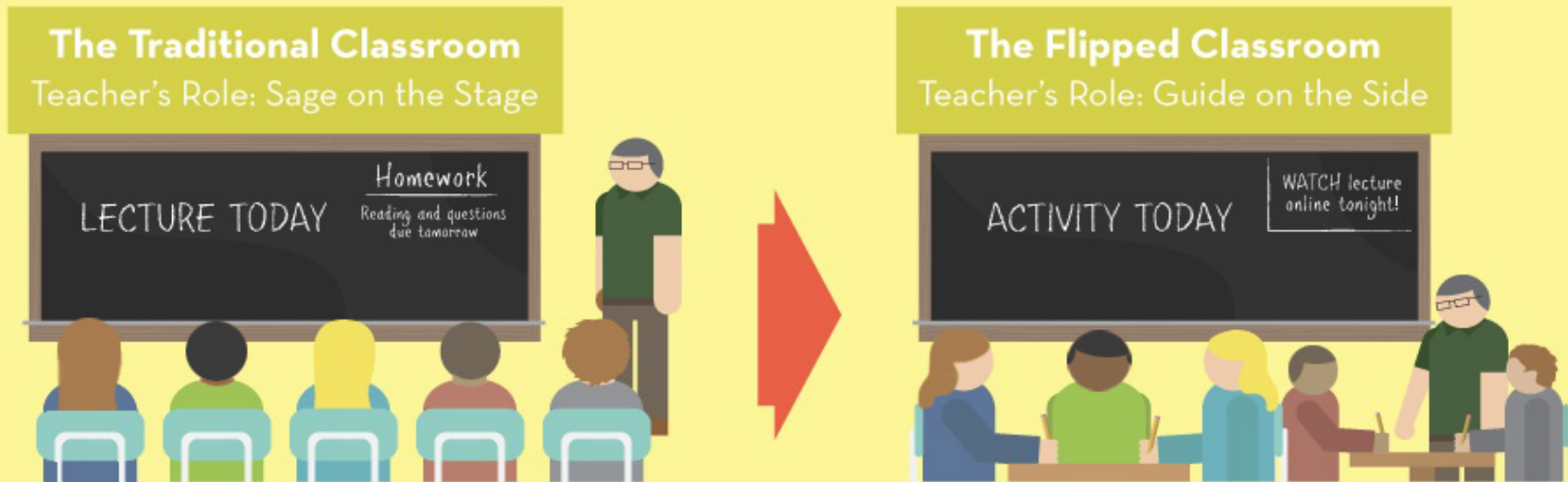
Flipping Your Class



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The flipped classroom inverts traditional teaching methods, delivering instruction online outside of class and moving “homework” into the classroom.

THE INVERSION



WHAT A FLIPPED CLASSROOM MODEL DOES



- Students watch lectures at home at their own pace, communicating with peers and teachers via online discussions.
- Concept engagement takes place in the classroom with the help of the instructor.

Source: <http://www.knewton.com/flipped-classroom/>

Flipping the NFF

- Yes, I am going to lecture about not lecturing in class
- Let's flip it!
- <http://www.screencast-o-matic.com> (one of many tools that can be used for lecture capture: Screenr, Captivate, Camtasia, Adobe Connect, etc...)



Flipping IS

- A complete re-conception of traditional lecture courses
- Moving active engagement into the classroom
- Placing lectures where they most appropriately support learners
- Shifting the instructor from “sage on the stage” to “guide on the side” in-class
- Flipping the instructional strategies in-class, not just the instructional medium

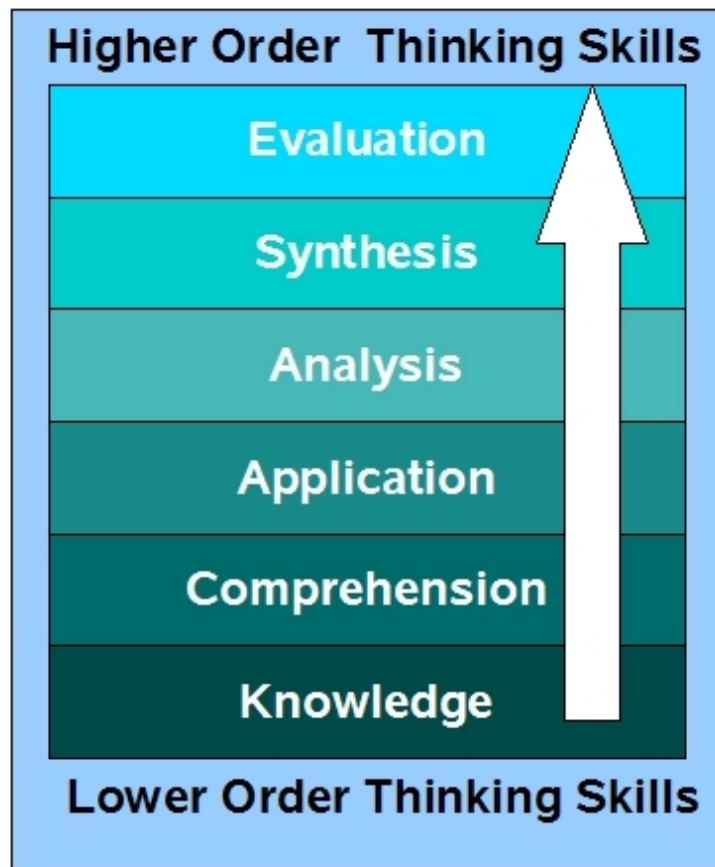


Flipping is NOT

- Lecture capture
 - Creating videos
 - Assigning videos as homework (instead of readings)
 - An anti-lecture movement
-
- http://www.youtube.com/watch?v=26pxh_qMppE



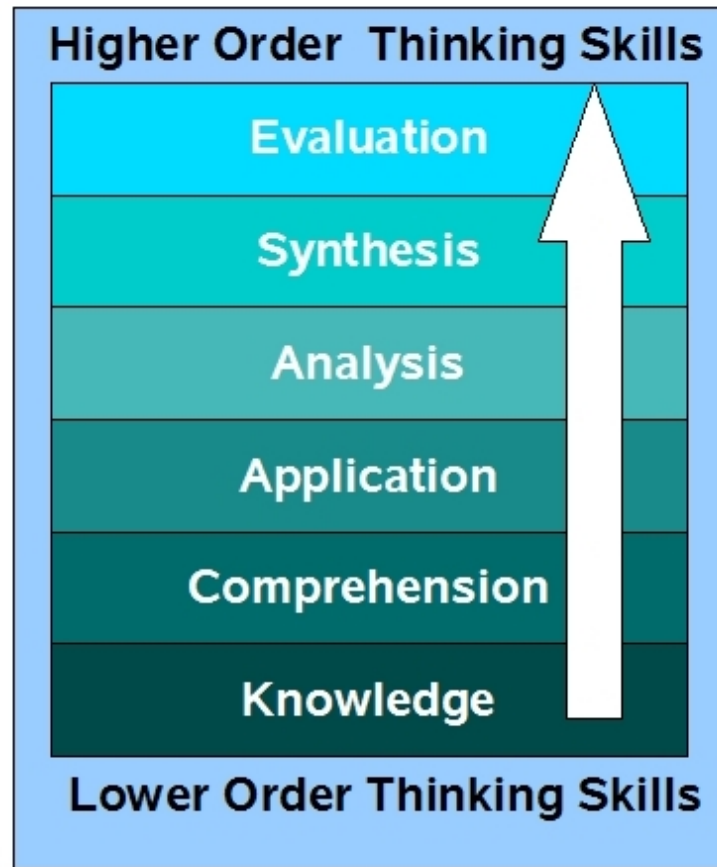
Bloom's Taxonomy of the Cognitive Domain



- Benjamin Bloom (1956)
- Educational objectives of the cognitive domain (note: also affective and psychomotor)



The Real Flip: Traditional Classroom

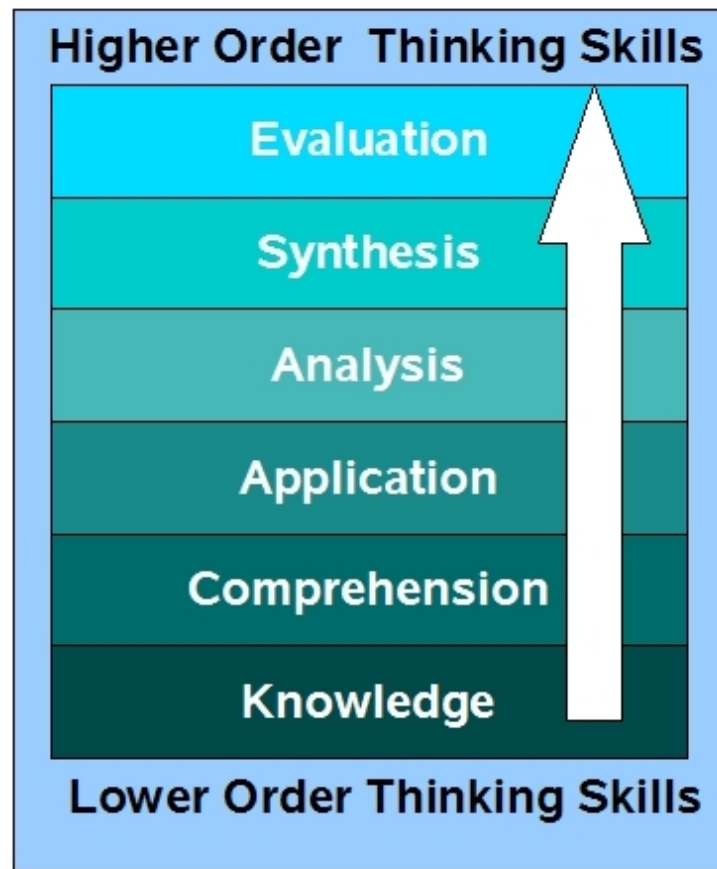


Generally done out-of-class

Generally done in-class



The Real Flip: Flipped Classroom

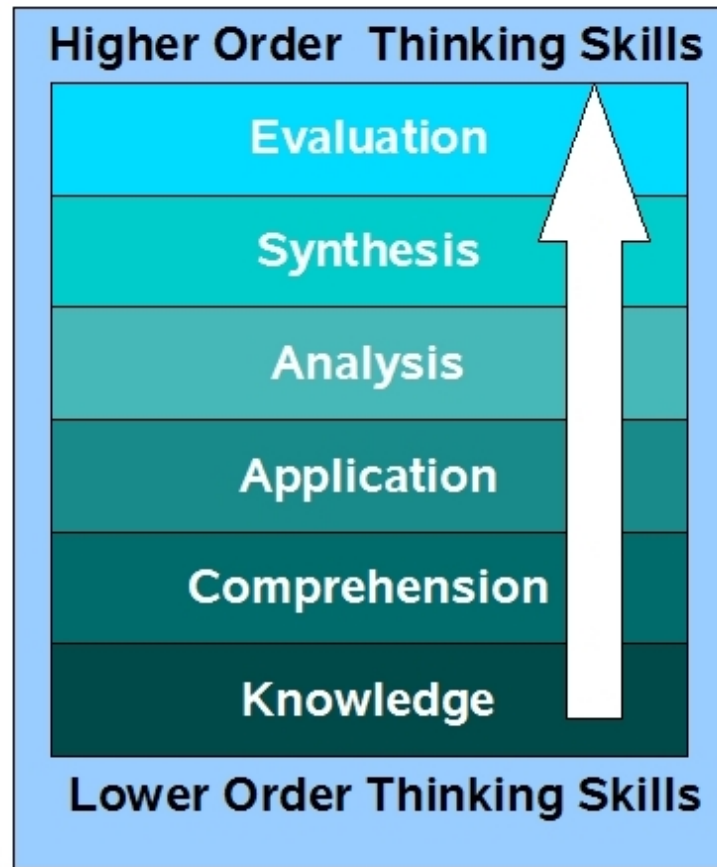


Generally done in-class

Generally done out-of-class



The Real Flip: Flipped Classroom



Generally done in-class

Generally done out-of-class
Yes, some of you have
flipped classrooms already!



The Flipped Classroom

Done at home

- Foundational knowledge (scaffolding activities)
- Readings
- Watching lectures
- Exploring online content
- Reflection questions
- Some level of accountability (e.g., quizzes, tweets, etc...)

Done in-class

- Construction and connection of new knowledge
- Discussion
- Group work
- Case studies
- Games & simulations
- Experiments
- Debates
- Problem solving
- Community projects



Videos

- Videos are often a part of flipping (but don't have to be and don't have to be fancy)
- Many instructors do a term of lecture capture in preparation for flipping
- Videos allow one instructor with a deep understanding of the material and effective communication skills to present concepts to all students
- Decreases pressure on sessional instructors
- Students can review videos throughout the term
- Content is delivered in more digestible chunks



Videos

- Don't feel you have to create videos; curation can be just as effective (existing videos, courses, etc...)
 - TED Ed: <http://ed.ted.com/>
 - YouTube Edu: <https://www.youtube.com/education/>
 - MIT Video: <http://video.mit.edu/>
 - MIT Open Courseware: <http://ocw.mit.edu>
 - Academic Earth: <http://academicearth.org/>
 - iTunes U: <http://www.apple.com/education/ipad/itunes-u/>
 - Open Yale: <http://oyc.yale.edu/>
 - Openculture.com: <http://www.openculture.com/>
 - OERcommons.org: <http://www.oercommons.org>
 - Class Central (MOOCs): <https://www.class-central.com/>



Cautions

- Don't add videos to at home work without taking something else away
- Textbook as (optional) resource
- Consider your space issues, but don't let them constrain you
- Don't assume your students will understand why you're doing this; explain it to them!



Challenge: What To Do With Class Time?

A wee bit of cognitive theory...

- Learning is distributed
- Learning is embedded
- Learning is socially distributed

(Hutchins, 1995)

- Learning is explicit (codified)
- Learning is tacit (non-codified)

(Polanyi, 1958)



Class Time

- Accountability means students come to class prepared
- Students have often had more time to reflect on course content
- Instructors can focus on higher order thinking (Bloom's) and development of tacit knowledge (Polanyi)
- Students can benefit from working in distributed, embedded, socially distributed contexts



Class Time Resources

- Flipped Classroom Time Best Practices:
<http://campustechnology.com/articles/2014/01/15/how-to-make-the-most-of-the-flipped-classroom.aspx>
- Classroom Structures that Encourage Participation:
<http://www.cte.cornell.edu/documents/Classroom%20Structures.pdf>
- Interactive Classroom Activities:
<http://brown.edu/about/administration/sheridan-center/teaching-learning/effective-classroom-practices/interactive-classroom-activities>
- Post-Secondary Interactive Techniques:
http://www.fctl.ucf.edu/teachingandlearningresources/coursedesign/assessment/content/101_tips.pdf



What Does the Research Say?

- Initial adoption based on theory, not evidence
- Research is now emerging
- Caution 1: NSD phenomenon in researching delivery modes (Thomas Russell)
- Caution 2: Confounding in delivery research (e.g., flipping vs active engagement)
- Caution 3: Much experience is [anecdotal](#)
- It's not “flipping”, it's the characteristics of how it's used: Research should, as always, be viewed critically (e.g., [NYT Article Debate](#))



Case 1: UWashington

- Freeman, Haak & Wenderoth (2011)
- Large section Biology courses at the University of Washington
- Decreased failure rates (17% to 4%)
- Freeman, S., Haak, D. & Wenderoth, M.P. (2011). Increased course structure improves performance in introductory biology. *CBE Life Sciences Education*, 10(2), 175-186. Retrieved from <http://www.lifescied.org/content/10/2/175.full>



Case 2: UBC

- DesLauriers, Schelew & Wieman (2011)
- Large section Physics courses at the University of British Columbia
- Increased Attendance (20%)
- Increased engagement (40%)
- Improved test scores
- DesLauriers, L., Schelew, E., & Wieman, C. (2011). Improved learning in a large-enrollment physics class. *Science* 332: 862-864. Retrieved from: <http://www.sciencemag.org/content/332/6031/862.short>



Case 3: University of Puerto Rico

- Papadopoulos & Roman (2010)
- Electrical Engineering course at the University of Puerto Rico
- Increased rate of information processing
- Increased depth of understanding
- Increased peer assistance
- Increased student achievement
- Papadopoulos, C. & Roman, A. S. (2010). Implementing an inverted classroom model in engineering statistics: Initial results. American Society for Engineering Statistics. Proceedings of the 40th ASEE/IEEE Frontiers in Education Conference, Washington, DC, October 2010. Retrieved from <http://dx.doi.org/10.1109/FIE.2010.5673198>



Case 4: MTSU

- Strayer (2012)
- Introductory statistics course at Middle Tennessee State University
- Decreased student satisfaction in the flipped classroom
- Strayer, J. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments*, 15(2), 171. Retrieved from <http://link.springer.com/article/10.1007%2Fs10984-012-9108-4>



Case 5: Harvard

- Mazur (2009)
- Large section physics courses with peer teaching at Harvard
- Increased achievement
- Improved problem solving skills
- Increased engagement (associated reduced gender gap)
- Mazur, E. (2009). Farewell, lecture? Science 323: 50-51. Retrieved from <http://www.sciencemag.org/content/323/5910/50>
- See also: Lasry, N., Mazur, E., & Watkins, J. (2008). Peer instruction: From Harvard to the two-year college. American Journal of Physics 76 (11), 1066-1069. Retrieved from <http://scitation.aip.org/content/aapt/journal/ajp/76/11/10.1119/1.2978182>



Back to Screencast-o-Matic...

- <http://www.screencast-o-matic.com>



General Advice

- Start small: Flip a unit/week, etc...
- If you're creating videos, focus on content that doesn't change frequently (foundational knowledge)
- Focus on content that can be used across multiple sections and/or courses
- Be a true “guide on the side” (mentor, coach, mediator, sage) and let students do the work
- Let flipping be an iterative, reflective process



How CTL Can Help

- Consultations on flipping your specific course
- Introductions to technology tools used for flipping
- Discussions of what to do with in-class time
- Connections with instructors already flipping (e.g., large sections, sciences/humanities, etc...)
- Peer consultations
- Mentorship circles on flipping
- Featuring your experiences at events



Thank You!



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References

- Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York: David McKay Company.
- Hutchins, E. (1995). Cognition in the wild. Cambridge, MA: MIT Press.
- Polanyi, M. (1958). Personal Knowledge: Towards a Post Critical Philosophy. London: Routledge.

