THE UNIVERSITY OF ILLINOIS AT CHICAGO

UIC

TLC ADVANCEMENT-OF-TEACHING WORKSHOP: FLIPPED INSTRUCTION & BEYOND
PART 1 – FRIDAY, JANUARY 29, 2016

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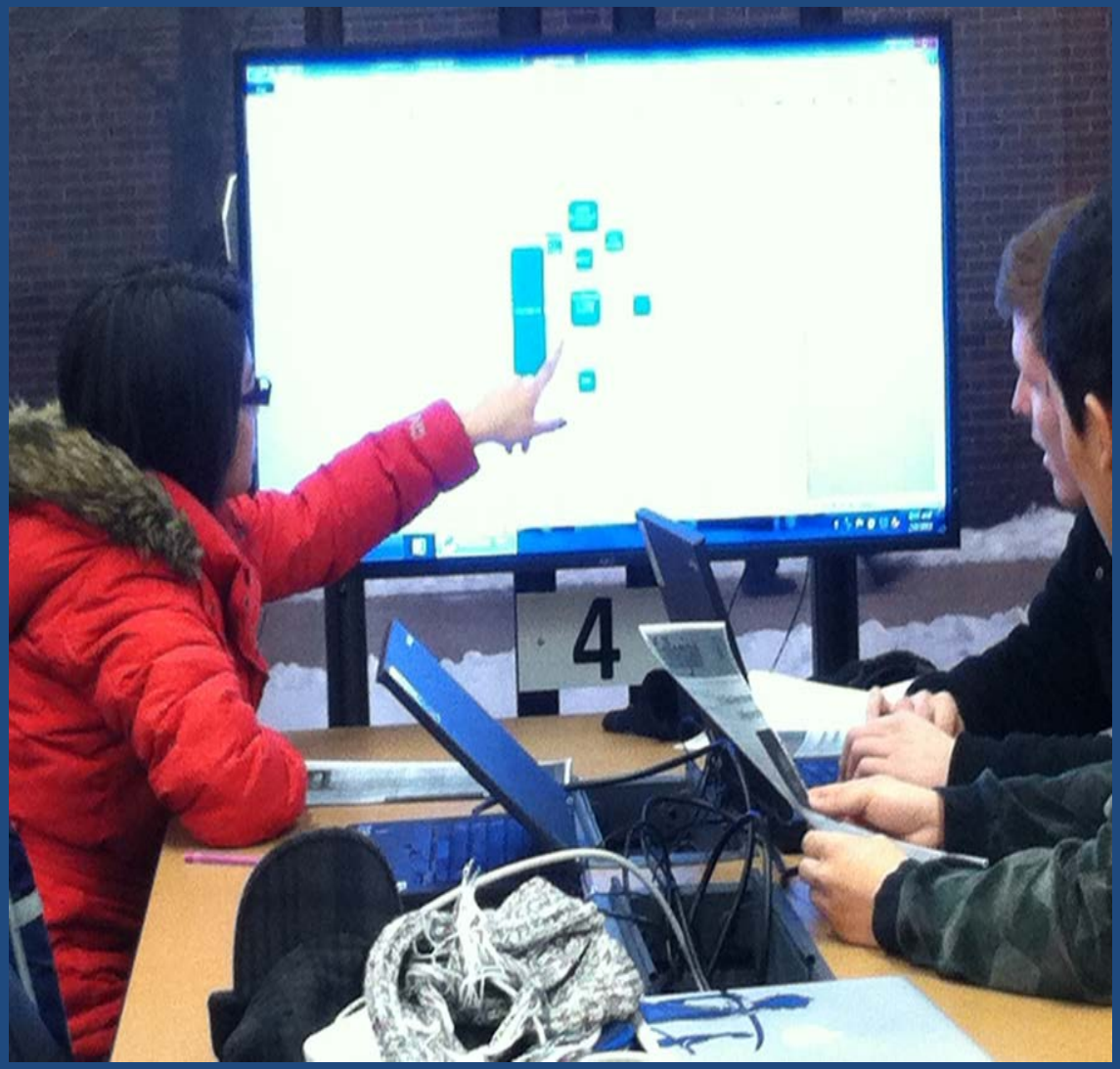
Agenda

- Introduction/overview of flipped models
- Example flipped activity
- Report on Successful Outcomes of UIC Flipped Course
- Future Planning
- Survey

Does your classroom look like this?

Or, does it look like this!

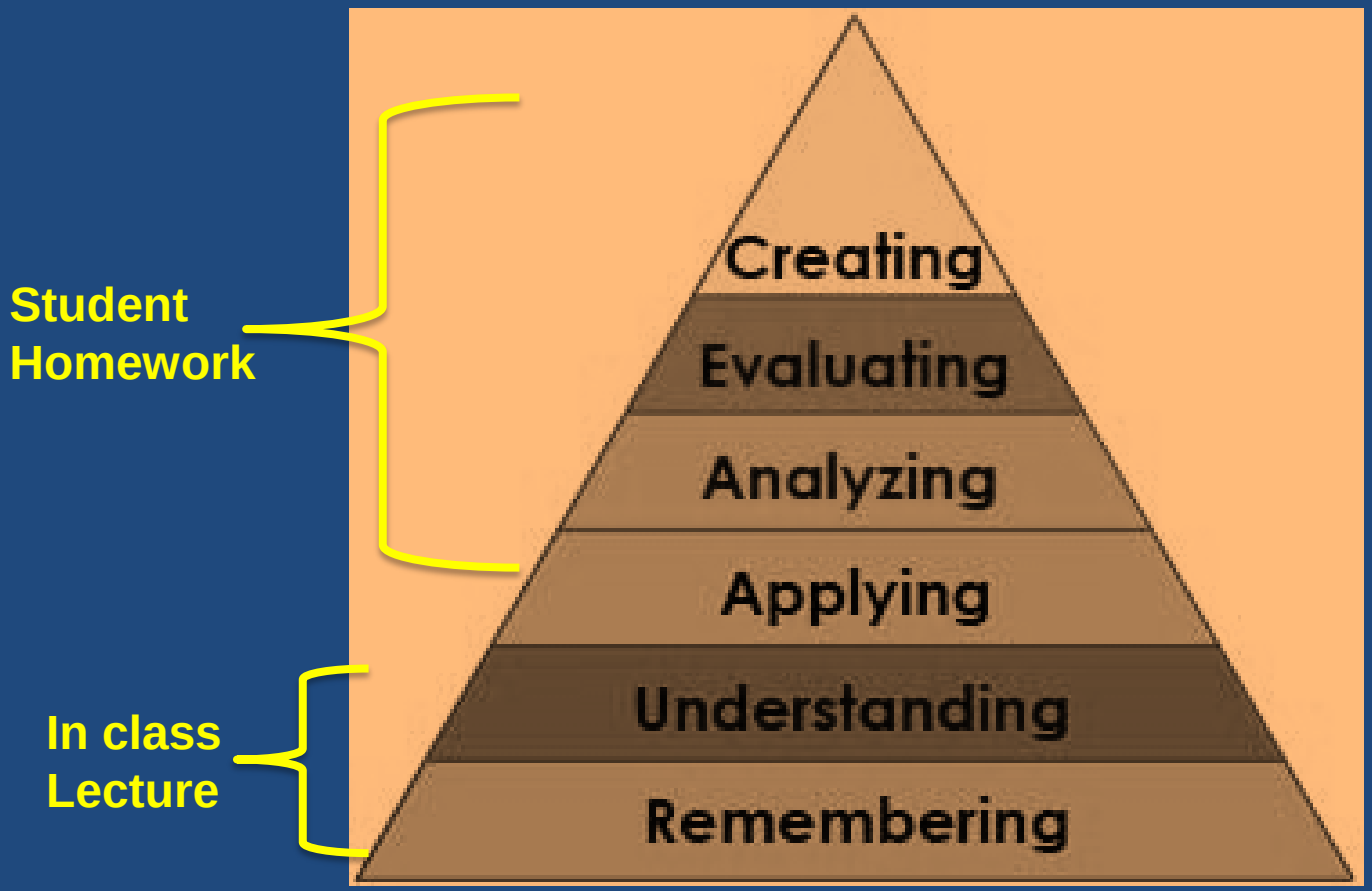


What is Classroom Flipped?

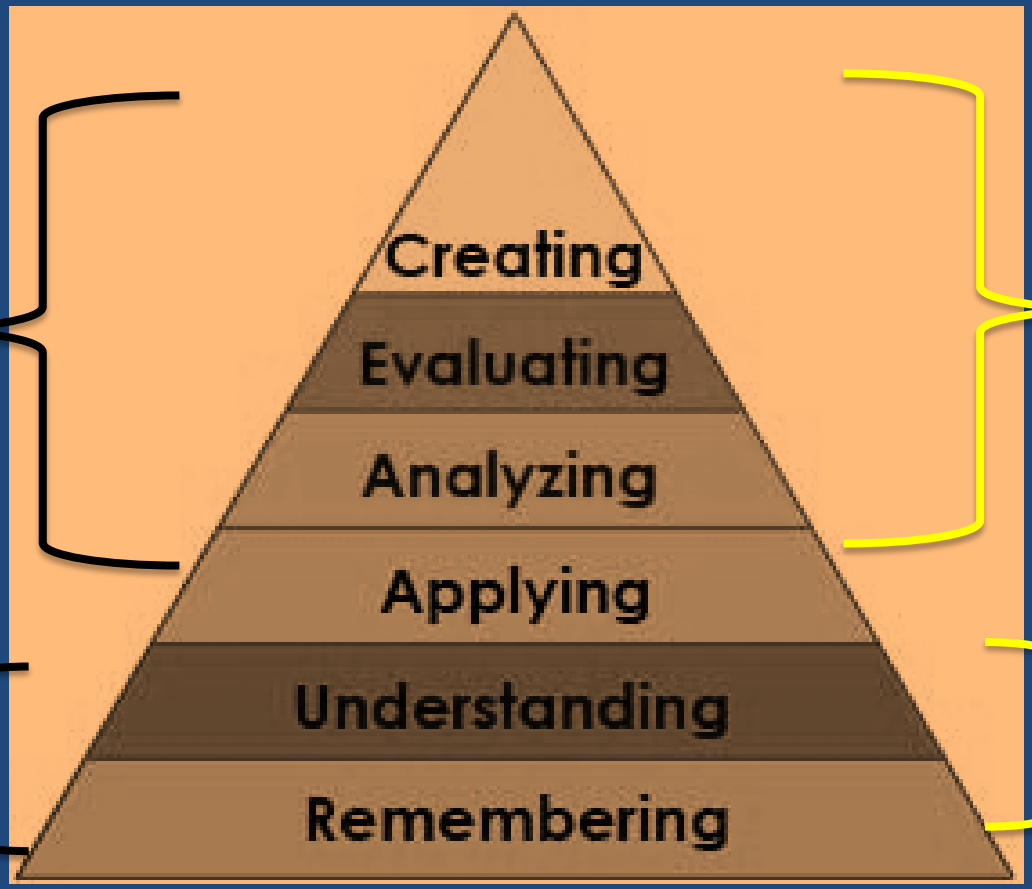
Traditionally Outside Classroom … Now Inside Classroom

Traditionally Inside Classroom … Now Outside Classroom

Traditional Approach



Flipped Classroom



Student Homework

In class Lecture

In class Discussion & Application

Student Homework

Thought Provoking Questions???

- **Why assign outside the classroom “stuff” that you cover inside the classroom?**

- **Why assign outside the classroom difficult “stuff” you should cover in the classroom?**

What “stuff” Outside the Classroom?

- Assign for understanding and remembering.
- Readings?
- Lecture Replacement … **VIDEO!**

Former Classroom		Current (Flipped) Classroom	
Activity	**Time**	**Activity**	**Time**
Review Homework	5 Minutes	Ice Breaker	5 Minutes
Lecture	40 Minutes	Review Homework	5 Minutes
Application	5 Minutes	Discussion/QA on Video	10 Minutes
		Application	30 Minutes

Reasons NOT to flip…

- The presenter got an article published in an obscure blog and said you should.
- Will bring your classroom into the 21st Century.
- You'll be on the cutting edge of education.
- Students expect technology in the classroom.
- It will make your job easier!

Reasons to Flip…

- **Boils down to higher forms of thinking through student engagement.**

Sample Home View Video

- This video presents an example of a classroom lecture substitution. Students will review this video, outside of class, to prepare themselves for discussion, application or evaluative activities during the next class meeting.

An Application Exercise

- The following slides provide instruction for an in-class activity titled “Trying it on for size”. The content discussion for this activity was presented in a video reviewed by students prior to its completion.

Peer Instruction:
“Trying it on for size”

The Tiling Task

- Individually, begin working on the task. Make sure to read the problem carefully, and show your work.
  1. How many tiles of each type will she need for a 40 cm by 40 cm square?
- With a partner, explain your strategy. Try to convince each other of the validity of your strategy.

The Tiling Task

- With a partner, work on the following question:

  2. Describe a method for quickly calculating how many tiles of each type she needs for larger, square tabletops (e.g., 50 cm x 50 cm; 120 cm x 120 cm).

- With a partner, explain your strategy. Try to convince each other of the validity of your strategy.

Answers to The Tiling Task

- Let the side of a tabletop be *x cm* by *x cm*
- Since these are multiples of 10, simplify and let: n = x/10
  - The number of quarter tiles is always 4.
  - The number of half tiles is $4(n - 1)$
  - The number of whole tiles is $n^2 + (n - 1)^2$

The following slides present data that supports the use of Flipped Instruction

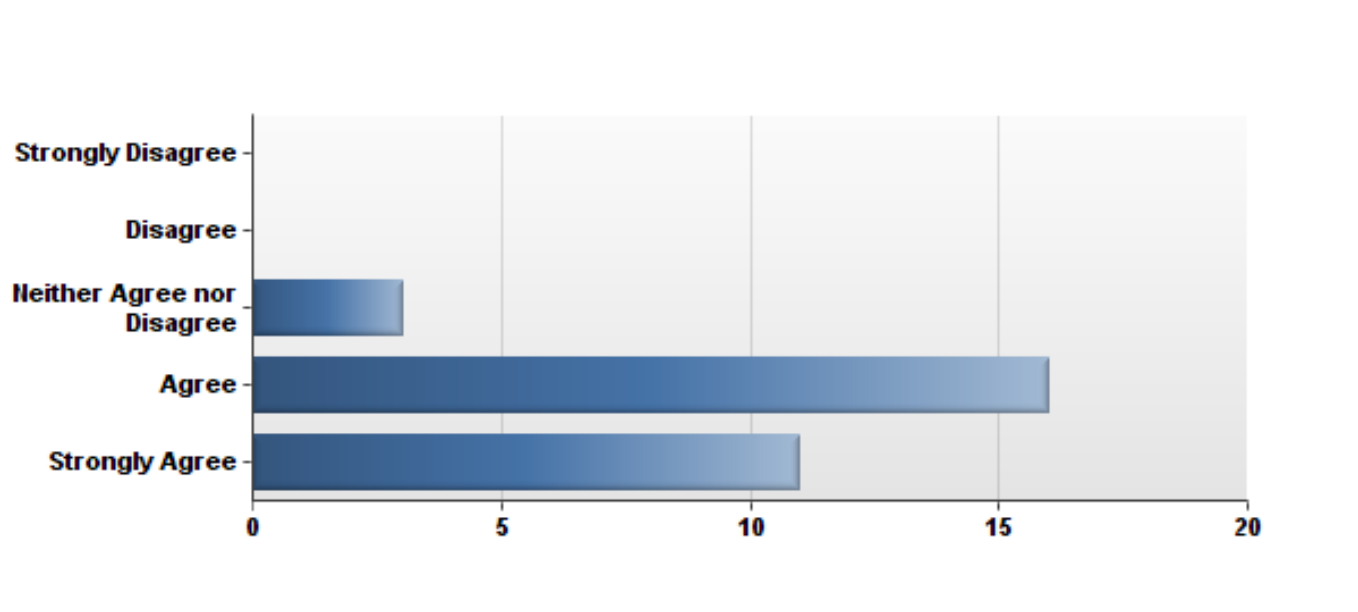
Survey Results

- Students in general are proficient using computers/Internet (M=4.6, SD=.62) and Blackboard Learn (M=4.57, SD=.5), and know what is expected from them in the course (M=4.46, SD=.49)
- Most students watched most videos prior to their test (87%). 83% of students watched all videos and 33% watched 85% of the videos
- Students experienced few or none technical problems accessing the videos (M=3.9, SD=.8).
- The large majority of the students watched videos from home (80%) and using a laptop (83%).

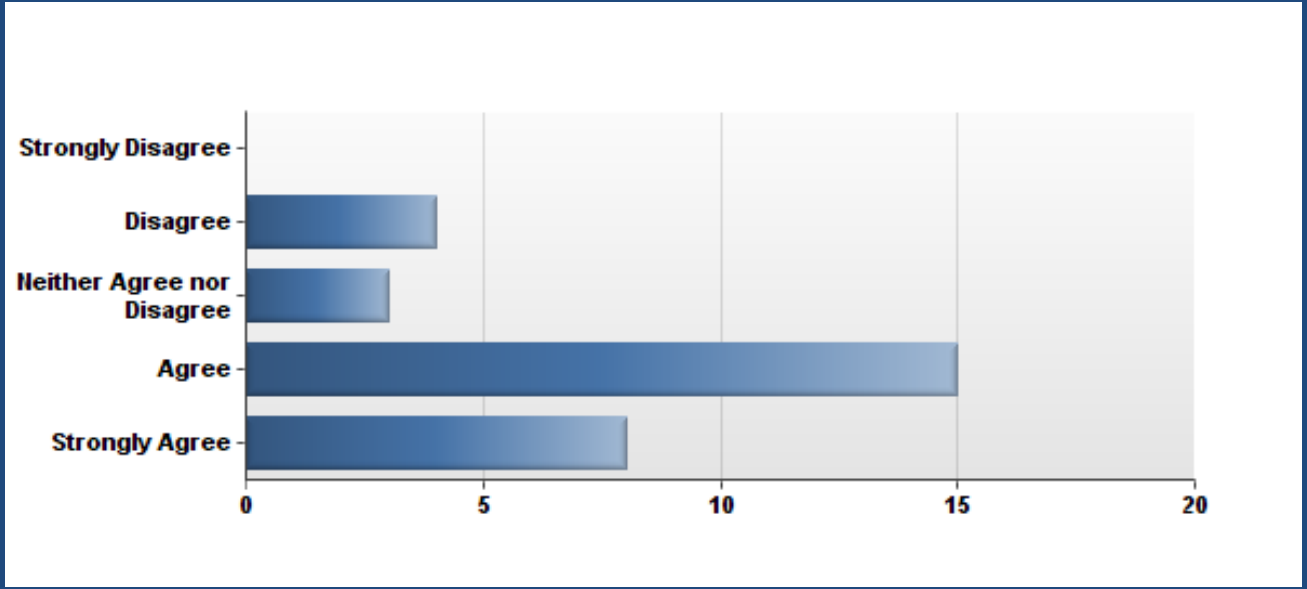
Survey Results

- Students agree that the videos enhanced their understanding of the course content (M=4.27, SD=.64), but are not clear on how the videos create a more engaging learning environment (M=3.9, SD=.96).
- Students prefer a course that has multiple short lecture videos (less than 20 min) M=4.0, SD=.95 versus a course that has fewer long videos (more than 50 min) M=3.23, SD=1.33.
- Majority of the students like video as a way to deliver content in the class.

The instructional narrated PowerPoint videos enhanced my understanding of the course content (M=4.27, SD=.64).

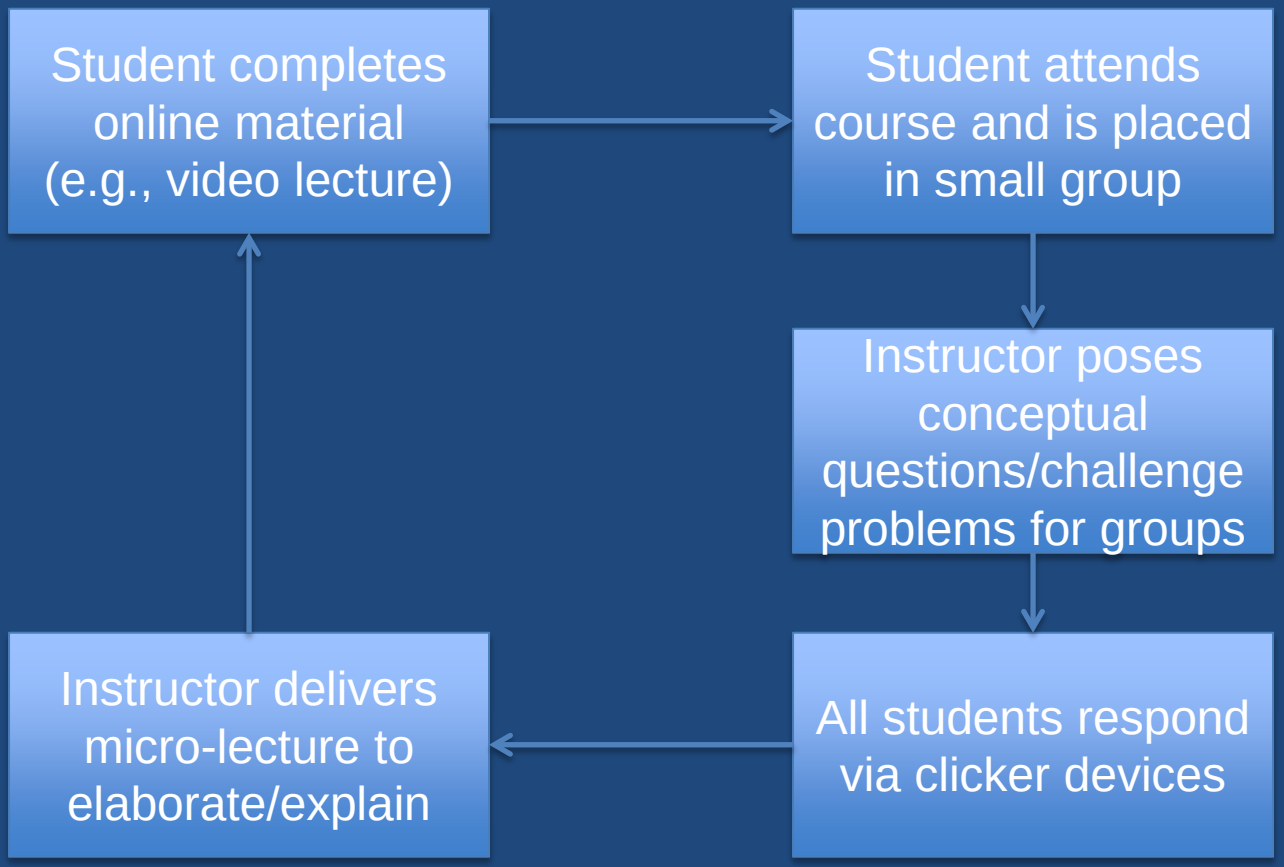


The videos/narrated PowerPoint slides in the course created a more engaging learning environment (M=3.9, SD=.96).



The following slides present support of the use of Flipped Instruction in select courses.

UIC CHEM232


Student completes online material (e.g., video lecture)
Student attends course and is placed in small group
Instructor poses conceptual questions/challenge problems for groups
All students respond via clicker devices
Instructor delivers micro-lecture to elaborate/explain

UIC CHEM232

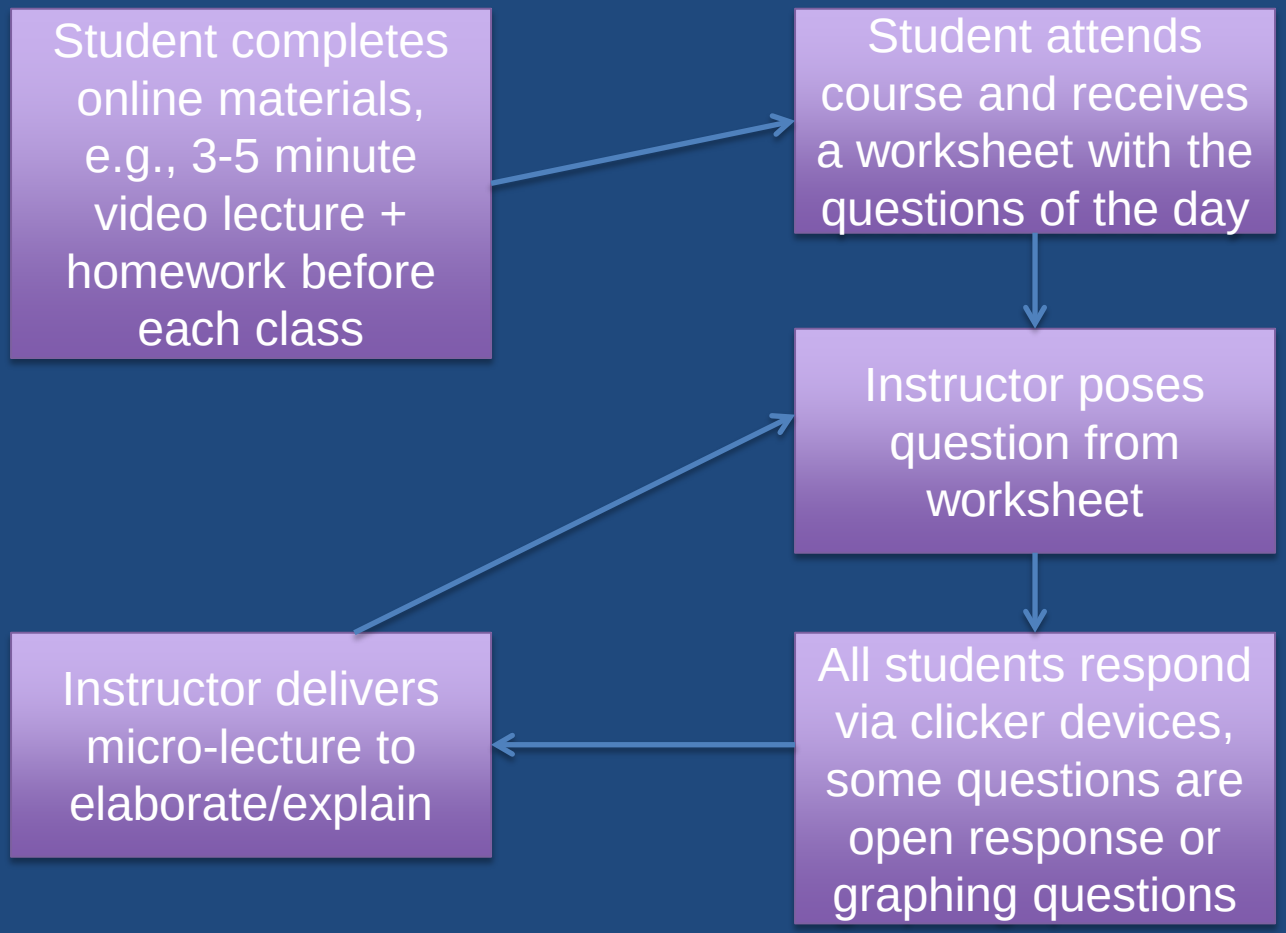
Before the Flip

- Structure
  - 30 hours of lecture
  - 6 hours of exam review in discussion sections
  - 52 hours of office hours
- Assignments
  - 10 quizzes
  - 3 exams
  - 1 final exam
  - ~450 homework problems

After the Flip

- Structure
  - 20 pre-lecture videos (~10 hours)
  - 33.75 hours of classroom problem solving
  - 6 hours of group problem solving in discussion sections
  - 20 hours of office hours
- Assignments
  - 15 quizzes
  - 1 final exam
  - **151 clicker questions**
  - Who knows how many homework problems?

Math 180: Calculus I



Math 180

Spring 2014

- Structure
  - 39 hours of lecture + 5 reviews in class
  - 15 hours of discussion sections
- Assignments
  - No collected homework problems
  - 15 quizzes
  - 2 exams
  - 1 final exam

Spring 2016

- Structure
  - 39 hours of interactive lecture + 5 reviews in class
  - 30 hours of discussion sections
  - 39 media clips
  - Attendance policy, strict grade cutoffs
- Assignments
  - 39 MyMathLab assignments
  - Weekly Written Homework
  - 39 Media Blackboard assignments
  - 2 exams – evening exams
  - 1 final exam
  - Over 200 clicker questions