



### At a Glance:

- Provides lecture materials outside class, while using class time to explore concepts and key points in material.
- Creates engagement and discussion in the classroom.
- Makes students accountable for class preparation.

### Who to Contact:

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### Potential Applications:



Maria has been teaching Fundamentals of Earth Science for several semesters. The first semester, she spent most of her time becoming familiar with the material, thinking about what to remove, and how better to reach her students. After several attempts, she is exhausted. Her students just are not participating at the level she expected. Despite carefully selecting readings and providing them to her students beforehand, she is unsure as to why they come to class after class unable and unwilling to participate. Her backup plan for the last few semesters has been to spend time during class reviewing the materials she provided before class. It is time for a change.

Last semester, she provided readings for students to complete before coming to class, as usual, but instead of starting the lecture and hoping students would participate, she began every day with a reading quiz. Students were expected to answer a few guiding questions at the beginning of class that would frame the major topics of the lecture. Now instead of spending the class reviewing the readings, most of the class was spent discussing how the readings related to the students' understanding of earth science. Students were graded on the

## 7 Things You Need to Know about Flipping the Classroom

A white paper from Information Technology Services at Penn State

### 1. What Is It?

“Flipping the classroom” is a pedagogical concept that replaces the standard lecture-in-class format with an opportunity to explore concepts and to review materials from outside of class. This can happen in many forms, but the underlying premise is that students review information outside of class and, instead of simply receiving information from the instructor, come prepared to discuss concepts.

### 2. Who Is Doing It?

**Jenny Shook** (STAT 200, 250) uses Camtasia to create short videos demonstrating the concepts that will be used in class. She provides paper quizzes at the start of class to gauge understanding.

**Kenneth Pasch** (ACCTG 211) lets his 1,300 students choose how much they want to interact in the course, from totally online to several combinations of online and face-to-face formats. Class time consists of video interviews about real-world application of accounting scenarios, and labs, explanatory homework videos, and podcasts of his lectures enhanced with slides and screen captures.

**Greg Pierce** (FIN 100) creates videos of the instructor working additional problems beyond the assigned homework as supplemental materials for students (iTunes U).

**Dirk Mateer** (ECON 102) uses lecture capture and group video projects to explain economic concepts, which are then used as reference videos for future classes.

**Sam Richards** (SOC 119) uses blogs and video to enhance a large class format, and lectures only once a week; the other two class periods are used for small group meetings.

**Jinger Gottschall** (KINES 360) uses clickers to assess student understanding of materials presented in the previous class with a closed book quiz, also using clickers. Even better, several students in class were assigned the task of creating the questions for the quiz.

### 3. How Does It Work? What Can You Do?

Some strategies for flipping your classroom can include:

- Assigning readings and following up with in-class discussion, quizzing, or breakout groups. The key is to assess students on the material and make the assessment count for part of their overall grade (clickers are an excellent tool for this).
- For an online or hybrid class, provide videos and readings for students to review and have graded forum discussions facilitated by instructors. Extend this idea by having students write a blog post explaining their view on a reading and have them vote on best posts by other students in class. Then, instead of talking about just the reading, the top two or three posts are also discussed. The class is still talking about the material, but students are more invested in the discussion.
- Outside of class, assign an additional project like a blog, an online module, or a video to teach technical aspects of an application the students need to use. Then in class, discuss the creative, grading, and storytelling aspects of the project.
- Capture your lecture from classes and provide the recordings for student review after class. Build on this by recording a video answering questions or providing more information to the class from questions asked by students inside and outside of class.
- Assign reading material outside of class and in class, have students actually teach sections (or have them create a video) to explain or teach a key point in the material.

Remember, these strategies can be manipulated to fit teaching style and course goals.

reading quizzes and received a participation grade at the end of the semester.

Overall, the class is much better. Maria is spending more time on complex topics, and students are more engaged in both the discussion and the class in general. Not one to rest on her successes, Maria is looking into using clickers to engage the whole class in discussions for next semester.

### Related Sites:

Khan Academy  
<http://www.khanacademy.org/>

TED Talk: Salman Khan  
[http://www.ted.com/talks/salman\\_khan\\_let\\_s\\_use\\_video\\_to\\_reinvent\\_education.html](http://www.ted.com/talks/salman_khan_let_s_use_video_to_reinvent_education.html)

Wall Street Journal: Turning the Classroom Upside Down  
<http://bit.ly/ngPKIW>

### Flipping the Classroom Research Team:

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## 4. Why Is It Significant?

Ken's experience with ACCTG 211 is very telling. The class average has jumped from 60-70 percent of students passing prior to implementing the changes to over 80 percent in the semester with this approach. The percentage of students earning As has increased from 12 percent to 26 percent in a single semester.

Jenny has received direct feedback from students that having access to these videos has been invaluable for them. When students have to miss class for reasons personal or otherwise, the videos have been critical to their ability to keep up with course material. Also, students who add the class late do not miss the first few lessons.

The shift to flipping the classroom does not have to entail huge changes by the instructor. Small changes can yield significant results. Providing a means for accountability of students to come prepared to discuss course materials in class can change the dynamic of a classroom, as well as the teaching. Instructors can spend time discussing the importance of the materials instead of reviewing the material itself.

## 5. What Are the Implications for Teaching and Learning?

Flipping the classroom creates a pedagogical shift from teaching methods that involve static and monologic content delivery, and opens up room for conversation between students and instructors around the application of course content and reflection on learning experiences. By making lecture materials available for students to review before class, class time is freed up to engage students in conversations around course content and assess student learning. Along with creating shifts in teaching methods, flipping the classroom challenges beliefs often held by both students and instructors about their roles in the classroom.

## 6. What Are the Downsides? Things to Consider?

With any fundamental shift in teaching practice, there is a period of transition--both for students, to unlearn the passive approach to traditional lectures, and for the instructor, to become familiar with what works for his/her teaching style and course goals.

Some of the approaches that use video and multimedia may not be accessible for students with disabilities. Multimedia, in most cases, can be made accessible by providing alternative formats.

Flipping the classroom may or may not include a technology component. When planning every aspect of the course, more investment of time and resources will be necessary. On the flip side, one can change the way the class time is used by simply requiring students to read materials outside of class, holding them accountable, and using class time for small group discussions. Either end of the spectrum or any place along the continuum can include technology, or can be accomplished with more traditional approaches. This depends on the level of comfort with technology and time available.

## 7. Where Is It Going at Penn State?

In fall 2011, Information Technology Services (ITS) is conducting a pilot of Echo 360, a tool used to record live lectures, as well as prepare recordings of lectures before or after class. This pilot is being undertaken to assess the feasibility of offering lecture capture as a service to the University. After the fall pilot, ITS, with the knowledge gained from faculty, staff, and students participating in the pilot, will make a recommendation on next steps for the University.

We are finding that more and more teachers are starting to introduce strategies for flipping the classroom in their courses, with a mix of the above examples.



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