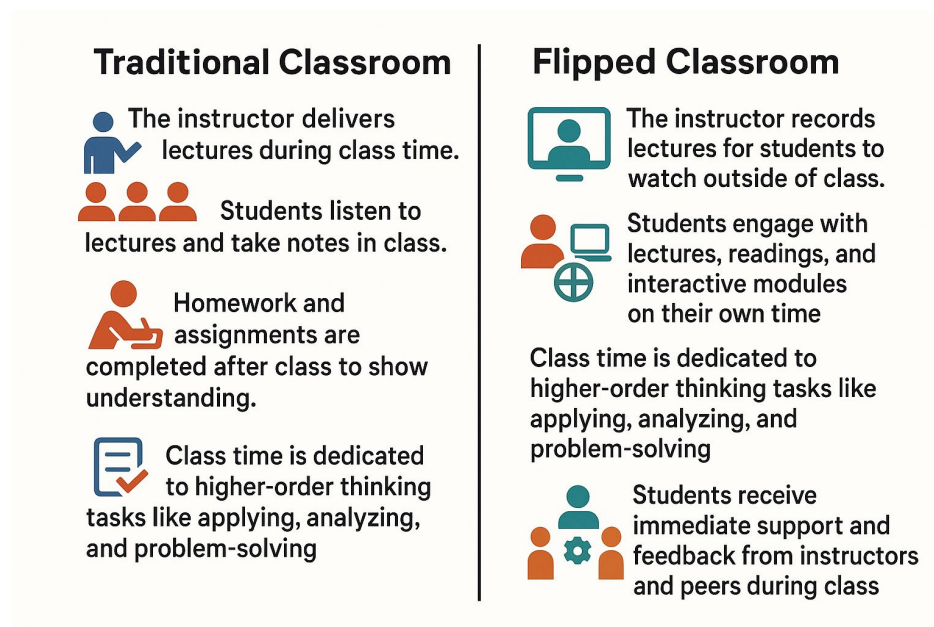


How and Why to Flip Your Classroom

What is a Flipped Classroom?

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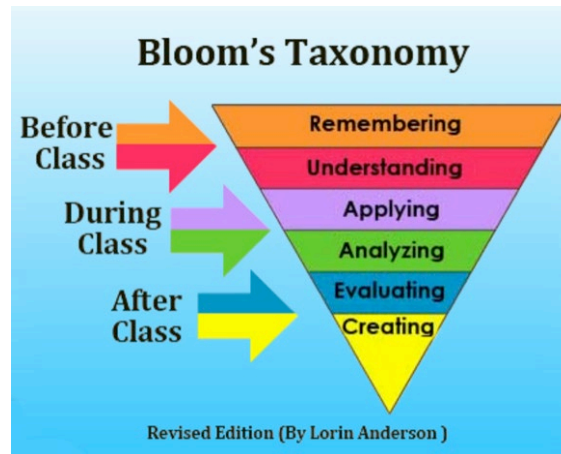
The flipped classroom is a pedagogical approach that shifts traditional instruction (lectures) to outside of class, using class time for interactive and collaborative activities instead. This model is highly effective in our university setting to promote active learning and deeper understanding for more advanced learners.



This model turns the typical classroom on its head. First exposure to content (direct instruction) - in the form of lecture videos, readings, interactive online modules, and other asynchronous materials, tools, and experiences - now takes place outside of class, eschewing the in-class lectures that serve as the most common way students are first introduced to concepts. Meanwhile, “homework” now takes place in-class – assignments and projects, including authentic assessments, where students apply concepts and put skills into practice.

One of the first benefits that you’ll notice here is the way that lower-level cognitive skills (such as understanding and memorization) are moved to self-directed time, while higher-level cognitive skills where learners may require more guidance in the beginning (evaluating, creating, analyzing, applying) are moved in-class where instructors and peers are available for guidance (Office of Medical Education Research and Development

[OMERAD], n.d.). Another benefit is immediate, continuous feedback for students while they attempt these more difficult tasks – feedback which can occur throughout the entire process from both instructors and peers.



Office of Medical Education Research and Development. (n.d.). What, why, and how to implement a flipped classroom model. Michigan State University. Retrieved September 25, 2025, from https://omerad.msu.edu/index.php?option=com_content&view=article&id=162:what-why-and-how-to-implement-a-flipped-classroom-model&catid=27:teaching

Additionally, moving graded assignment and assessment completion into the classroom allows instructors to **ensure responsible and appropriate utilization of AI**. By observing students more closely as they demonstrate the core competencies for a course, instructors can carefully monitor AI use and guard against cognitive offloading. Instructors can also model AI use as a tool to enhance learning rather than an attempt to bypass it.

Why Flip Your Classroom?

There are numerous benefits to the flipped classroom model including, but not limited to:

- **Enhances Student Learning:** A flipped classroom allows students to learn at their own pace when first encountering concepts. They can pause and rewind lecture videos as required and proceed through or retake online modules at their own pace. Then, when students need to move towards more complex application of skills and concepts, instructors and peers are present to model and guide students through the more difficult and advanced stages of learning. According to Patricia Roehling and Carrie Bredow of Hope College, "Students in flipped classrooms performed better than those in traditionally taught classes across all of the academic

outcomes we examined. In addition to confirming that flipped learning has a positive impact on foundational knowledge... we found that flipped pedagogies had a modest positive effect on higher-order thinking. Flipped learning was particularly effective at helping students learn professional and academic skills” (Roehling & Bredow, 2013).

- **Optimizes Instructor-Student and Student-Student Interaction:** Learning possesses a significant social dimension, particularly in relation to motivation and the construction of knowledge. The flipped classroom model enhances opportunities for meaningful dialogue and collaboration both between students and instructors, as well as among peers.
- **Increases Student Engagement:** Research indicates that students in flipped classrooms report higher satisfaction compared to traditional lecture formats, citing benefits such as the flexibility to access pre-class assignments and learn at their own pace, as well as a greater focus on discussions and hands-on activities during class (Dsouza, Divyabharathy, & Daniel, 2025).
- **Ensures Responsible AI Utilization:** By observing students as they complete assessments and assignments in the classroom, instructors can model and monitor ethical and appropriate AI use and ensure proficiency with core competencies.

How to Flip a Classroom

Give careful thought to your flipped classroom before you begin teaching it and throughout the process:

- **Planning and Design (Before Class):** Select and prepare foundational content for students to engage with outside of class, such as short video lectures, readings, and interactive modules that align with learning objectives. Place activities where students may safely use AI tools unmonitored (e.g., summarizing readings, generating practice quiz questions, or brainstorming) in this out-of-class work. Reserve content that requires deeper critical thinking, originality, or academic integrity risks (e.g., graded problem-solving, essay drafting) for guided, in-class activities.
- **Student Preparation and Accountability (Pre-Class):** Clearly communicate the flipped model and expectations to students, including how and when AI tools may or may not be used. Build in accountability with low-stakes pre-class quizzes, reflections, or guided reading notes that check for comprehension.
- **In-Class Transformation (During Class):** Design in-class time for active learning that maximizes human interaction, collaboration, and immediate feedback. Focus class activities on higher-order skills like application, analysis, synthesis, and

debate, where AI either cannot easily replace critical engagement, or where students benefit from supervised use of AI for comparison, critique, or refinement. Explicitly connect these activities to the pre-class materials to demonstrate how preparation (with or without AI) enables deeper learning.

Flipped Classroom: Example Lesson

Table: Flipped Lesson Example: Enzyme Kinetics for Biology Class

Phase	Activity	Goal
Before Class (Out-of-Class)	Students watch a pre-recorded lecture/video (15-20 min) and complete a short reading on Michaelis-Menten kinetics , including the concepts of $V_{\max}$ and K_m .	Knowledge Acquisition: Students gain a foundational understanding of the core concepts and equations.
In-Class	Students work in small groups using an online simulation (e.g., from a virtual lab platform) where they adjust substrate concentrations and measure reaction rates for a specific, unknown enzyme isolated from a hypothetical organism.	Application: Students apply their foundational knowledge to collect and analyze realistic, though simulated, data.

References

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