

Instructional Technology: An Introduction

“Instructional technology” encompasses roughly three types of technology that serve different purposes. Nowadays the term also evokes a student-centered, technology-dependent pedagogical approach. The following outlines these types and the pedagogy.

Type 1. Learning Management Systems (LMSes)

At their core, these make course materials available electronically. Though differing in the tools they provide, LMSes typically offer file management at the very least.

Canvas, IU’s new LMS, prioritizes students’ online experience:

- With minimal effort, instructors can create a veritable course website that students can engage almost exclusively through a web browser.
- Like a wiki, Canvas facilitates linking to content, turning a course’s LMS site into an integrated learning environment.
- Canvas provides a variety of helpful tools for online course management. E.g.:
 - A calendar that allows instructors to create online sign up slots (e.g., for ensemble practice times in your studio, office hours, etc.).
 - Electronic submission and grading of assignments.

Type 2. Classroom devices

These are instructor aids such as document cameras, CD players, data projectors, etc. As a rule, use these only if they positively impact time management. Ideally a technology minimizes the amount of class time spent doing “grunt work,” freeing up instructors and students to work through higher-level activities together.

Example of “grunt work:” verbally relaying IPA to choristers during rehearsal.

Classroom technology solution: document camera displaying annotated score with IPA during rehearsal.

(Another technology solution: annotated PDF of score posted to LMS before rehearsal.)

Type 3. Instructional software

These are course-specific applications that aim to teach students content/skills. Such software is often lauded with buzzwords like “self-pacing” and “personalized” learning. They are especially useful for online or “blended” courses and “flipped” classes.

With such software, students have greater control over their learning: they choose when, where, and at what pace to cover material. Instructors can, of course, impose deadlines for meeting specific content milestones. Such software also moves content coverage outside of the classroom—more on this below under the “flipped” class.

Ideally, an application is both **interactive** and **adaptive**.

- **Interactivity** forces students to be engaged, active learners.
 - These interactions can take a variety of forms: answering questions, playing / singing back a melodic snippet, etc.

- **Adaptability** means the software responds to students' abilities, thereby permitting each to progress at an appropriate, personalized pace.
 - For instance, the application might offer a student hints, lead them through supplemental exercises, or skip over entire sections based on their performance.
 - Adaptability is primarily a concern for online courses, i.e., courses with no in-person class meetings.

Student-centered, technology-dependent pedagogy: the “flipped” class

In spirit, the “flipped” class is nothing new: students are expected to cover content outside of the classroom—much like learning your part for an upcoming ensemble rehearsal or doing readings prior to a seminar meeting.

By moving content coverage outside of the classroom, “flipping” frees up class time for higher-level tasks that benefit most from instructor involvement: discussion, analysis, evaluation, criticism, etc.

Technology is central to the flipped class:

- LMSes enable instructors to share content with students and assign tasks.
- LMSes allow instructors to incorporate a variety of content.
 - Especially effective and flexible are **podcasts** and **screencasts**, i.e., short, ~5-minute video lectures vetted (and more typically created) by the instructor.
- Instructors can (and probably should) evaluate if students have covered and grasped the material by the start of class time. Two examples:
 - Requiring electronic submission of a just-in-time assignment or quiz.
 - Using established or specially-designed instructional software(s) for content delivery.

Finally, flipping is not an all-or-nothing approach: you can flip a single class meeting or an entire course. Think about starting small—a few flipped classes within a full course—and moving on from there.

Two parting thoughts

Every new instructional technology must first undergo a serious cost-benefit analysis to ensure it facilitates teaching and learning. But bear in mind: any instructional technology, in the hands of the right *student*, will facilitate learning.

And to reiterate a recurrent theme in discussions of instructional technology, there is no silver bullet: no one technology will answer all of our instructional goals and our students' learning needs. Framed positively, this shortfall merely encourages exploring and experimenting with a variety of technologies.