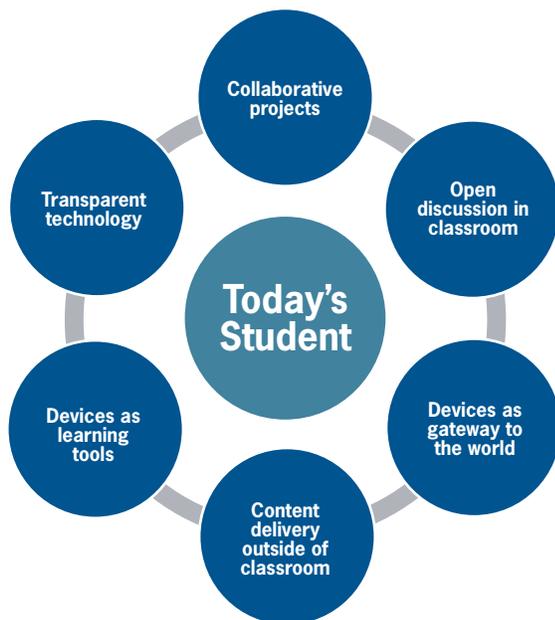


Next Generation Classroom— Some Random Thoughts

When you think of a next generation classroom, what comes to mind? Is it a classroom visibly filled with the newest, flashiest technology?

Not for me. In my ideal next generation classroom, technology is transparent, and the focus is on people. Whatever technology is in my next generation classroom exists only to support human connection and the sharing of ideas. It nurtures academic goals; nothing is installed for technology's sake. Technology is a component of my ideal classroom, but only if it is used appropriately. In this classroom, technology enables the aspects needed to enhance the learning experience for today's student (see figure 1).

Figure 1. Today's Student



Transparency can be interpreted two different ways, and the technology of the next generation classroom should fit both. First, it should be invisible. For technology to become invisible to faculty and students, it must be easy to use. Instructors often struggle with projectors, lights, and media panels. I have been challenging my staff to create a classroom that automatically configures itself for an instructor when he or she simply walks into the room: displaying the course name on the projector, dimming the lights when a computer is connected, and offering easier methods of projecting (e.g., a one-button USB dongle). In a data-driven college or university, we know the class schedule and can remember instructors' preferences, making personalization feasible.

Invisible technology also shouldn't create barriers between people. We must not spend class time with faces shielded by laptop screens. Instead, we should be free to interact, invisibly aided by technology. Technology shouldn't distract students from the subject or the people around them. Instructors often avoid using engaging tools like online polling because they fear students will quickly be distracted by social media when they take out a laptop, phone, or tablet. But if a student's device is his or her way to stay connected to the world, why should we take it away in a class? Can't we work *with* these powerful tools instead of around them? For example, I like to ask my students to look up concepts online during class to encourage the productive use of devices.

Distraction is not my greatest problem with these devices. My concern is that if students do not have additional tools, the information they find on their devices is visible only to them, instead of being shared with the rest of the class. Speaking to the second meaning of *transparency*, I want the information in a classroom, whether it is the instructor's slides or the students' insights, to be available to all. Technologies that use natural language processing (NLP) such as Google Home can be a powerful classroom asset, allowing an entire class to receive the information together.

My ideal next generation classroom adopts a blended model, using both online content and classroom sessions. I've taught with a flipped classroom model for years. I use Panopto Recorder on my computer to record a week's worth of information, including both my webcam video and the slides. I love the flipped classroom model because it frees me from the pressure of covering an entire week of material in one session.

Some instructors have difficulty negotiating the balance between online delivery methods and live classroom sessions. When my colleagues ask for advice, I point out that the successful 21st-century course is not about classroom versus online; rather, it's always about pedagogy and content delivery. When they are designing courses, faculty should ask: "If my students are coming to class in this globally connected world, why would they want to come to a *classroom*?"

In a blended model, the heavy information transfer occurs outside the classroom, so when we're in the classroom the focus is on people. Decades ago, information was more difficult to find, and live instruction was the most valuable way to transmit information to students. Today, students not only consume information provided by instructors outside of class time but also seek ideas from multiple sources and connect it to what they learn in class. Through the power of the internet, content and knowledge have been liberated. Because of this, an instructor's time is better used to create a sounding board for students, helping them



By RAVI PENDSE

increase the strength and the quality of their thinking. This is also a better use of students' time, and students notice and appreciate when instructors respect and value their time. When a class is able to have free-flowing conversations, students learn something more important than the information: they learn how to think. Through spontaneous classroom discussion, students are able to connect learning concepts with relevant and interesting thoughts, from news articles to fiction. Creating connections and synthesizing information are key to learning.

The success of a flipped classroom is not just about the quality of the technology; it's also about the agreement that instructors have with their students. If several students don't view the content before class, they will not get as much out of the in-person session and will hold back their classmates. During the first few classes of some semesters, I get a blank look from those students who have not watched my recordings. I have some tricks to reduce the number of these blank looks. During a recent semester, I subtly told my students that I could tell which of them had watched my online content. I also regularly give quizzes on the material. However, it's important that these measures do not feel punitive and that I am creating an atmosphere of learning and mutual trust. Some days students may be unprepared, but instructors can accept that and use it as an opportunity for conversation.

A blended classroom has other benefits. I have challenged my faculty colleagues to "weatherproof" their classes, allowing students to join them during inclement weather thanks to easy tools like Cisco WebEx. I also use this technology to teach when I'm traveling. In addition, the rich, searchable content available through a lecture-capture tool like Panopto is valuable for different styles and abilities of learners. Technologies that increase the accessibility of content benefit all. For example, after we added captioning to many of our lecture-capture courses, I heard from students who do not necessarily have a disability but

who rely on the captions when they are studying in quiet libraries. We originally purchased Dragon speech-recognition software for students with disabilities, but it also proved useful for PhD students working on their dissertations. Typing hundreds of pages can be time-consuming and uncomfortable; the dictation software makes the task easier, especially for slower typists and those with less-than-ergonomic home offices.

The next generation learning experience should lean heavily on collaboration. I see a trend, especially in the sciences, that worries me. Many instructors discourage or even forbid students from collaborating with their classmates, considering it to be cheating. This puts enormous pressure on students. More importantly, this type of learning does not model what they will encounter in the work world, where they will be not discouraged but, rather, *expected* to collaborate. While I understand the necessity for independent work, there are other ways to achieve the goal of mastery while encouraging collaboration. Some instructors simply alternate assignments, requiring independent work with collaborative projects. Collaborative work can also be paired with lessons about ethics and plagiarism to help shape our students into responsible, ethical adults.

Some of my contemporaries seem pessimistic about today's students, noticing, for example, that students prefer smartphones to books. I don't subscribe to this pessimistic view. The same tension occurs with every generation: I remember this skepticism from older generations when I was young. Today's students grew up with information at their fingertips, so they think differently and learn differently. We should recognize that what they need from a next generation classroom is different too. ■

Ravi Pendse (ravi_pendse@brown.edu) is Vice President and Chief Information Officer at Brown University.

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