Teaching and Learning | Feature

2 Great Techniques for the Flipped Classroom

Inspire more student engagement in a flipped class with these two pedagogy-driven methods.

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When Julie Schell makes a presentation on innovation in teaching and learning, she likes to share a photograph of college classroom from the 1800s. Compared to a typical classroom today, it's hard to see any substantial differences. The lesson: Educators "need to change how we teach students," she believes.

As director at the University of Texas at Austin's Center for Teaching + Learning and associate in the Mazur Group at the School of Engineering and Applied Sciences at Harvard University, Schell is dedicated to helping other educators learn innovative teaching methods — among them how to flip the classroom to inspire more engagement among students. In a recent presentation at the Online Learning Consortium (formerly the Sloan Consortium) Blended Learning Conference, she made a point of emphasizing that "flipped learning and blended learning is about pedagogy, not about technology." It's not just about cranking out video lectures: Pedagogy, she said, "must drive classroom decisions."

To ensure that pedagogy stays at the forefront of innovation in the classroom, Schell shared two favorite techniques for flipping.

1) Just-in-Time Teaching

Just-in-Time Teaching, or JiTT, is a technique for getting students to prepare before coming to class. Developed by Gregor Novak, a professor emeritus in physics at Indiana University-Purdue University Indianapolis, JiTT uses formative assessment to determine students' understanding of course material and plan class time accordingly.

"In a flipped classroom, what we're trying to do is build up [students'] prior knowledge to scaffold the deeper learning we want to do during class time," Schell explained. To build that knowledge, students are
given a "coverage assignment" — such as going through a reading, watching a video or another activity.

The next step, said Schell, is to develop a formative assessment, consisting of two "conceptual questions" and one "feedback question." A good conceptual question "directs students to the kind of thinking you want them to be doing," she noted. Students should not be able to answer conceptual questions if they haven't done the assignment: These questions typically aren't a matter of memorization; they require more analytical thought.

But the "secret sauce," she said, is the feedback question: What do you find most difficult or most confusing or interesting about this concept or topic? "This is where the magic happens," said Schell, adding, "Many of us have students who say, 'I don't find anything confusing or interesting.' So a follow-up could be, if you don't find anything confusing or interesting, what do you wonder about this concept?"

A quick review of students' responses helps the instructor get a sense of student misconceptions. "Most of us have a ton of intuition about what they're going to find confusing or interesting," Schell said. "What you're looking for is stuff that you don't expect." Then, she advised, use those responses to direct how class time is spent. "Instead of going into class assuming what they found difficult or confusing, you go in addressing what they say they found difficult or confusing," she said.

Schell scores her students on their responses to these formative assessments, and in at least one course, one-third of her students' overall grade is predicated on their JiTT work. The rubric she uses is:

- Zero for a question left blank or incomplete;
- One for a response that has an answer but does not provide any reasoning or rationale; and
- Two for a response that has an answer along with reasoning or rationale, even if the answer is wrong.

It's important, she said, "not to grade them on correctness. What you're trying to do is build the effort — help build the motivation to engage in the effort for learning, to prepare for deeper activities during class time."

**When Students Won't Do Their Work Beforehand**

If you're having trouble getting students to do questions before class, Schell recommends a low-tech tool: "Immediate Feedback Assessment Technique" (IFAT). These scratch-off cards from Epstein Educational Enterprises are useful for multiple-choice questions and cost $110 for 500 cards showing 50 questions. (To conserve money, Schell cuts each card into five sets of 10 answers; then a set will last her for three or four years.) The student chooses an answer and scratches it off. If he or she is right, a star appears. If the wrong answer is chosen, it's blank. And the instructor can tell how many times it took the student to find the correct answer. "There's something so awesome about scratching off and seeing a little star underneath," she observed. "It gives you a little shot of dopamine."

**2) Peer Instruction**

A common question Schell gets asked is, if my students are learning everything before class, what do I do during class time? Her response: peer instruction, a technique developed at Harvard. It follows these steps:

1. The instructor gives a "mini lecture," a brief introduction to a topic;
2. Students are asked a question related to the topic that expands their thinking;
3. Each student chooses an answer individually and moves into peer discussion to try to convince a fellow student of the rightness of his or her response;
4. The student responds to the same question again;
5. The correct answer is shared by the faculty member;
6. Students are invited to share why they chose the answer they did — right or wrong; and
7. A longer explanation is provided.

No step of the workflow can be skipped, she insisted. Also, students should discuss their answer with another student who disagrees — not agrees — with it. "You want a rich conversation, and to get that you need to create some dissonance." She added that students are more likely to come forward when they already know they're wrong; that's why she shares the correct answer before she asks students to explain their thinking.

In blended learning vernacular, what's happening, Schell explained, is that the student is given a trigger (the lecture and question); they engage in self-awareness; they do exploration of the content; then they integrate their understanding based on the conversation. Finally, they come to a resolution.

**Low-Tech and High-Tech Tools**

Schell offers several methods for doing formative assessments similar to what's described here: voting with hands, using clicker software and even flashcards in small or large format, which can be printed out and brought to class.

In courses where computing devices are prevalent, Schell uses an assessment program from Learning Catalytics, a company she has been involved with for about four years. Now owned by Pearson, Learning Catalytics provides for multiple-choice questions as well as open-ended questions. The instructor can view the responses in real time to probe student understanding. Pricing for this program is free to faculty and $12 for a student account (with institutional discounts).

Socrative is a similar option used in K-12 and higher ed; this one is free for classes while the product is in beta testing.

The goal is "slay the boredom monster" that exists in every classroom by breaking up traditional lecture time into smaller modules, Schell said. Even if the classroom layout is the same as it was 150 years ago, peer instruction combined with Just-in-Time Teaching can convert that learning space into something far more engaging and interactive that will encourage students to do deeper thinking.

About the Author

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