# The key to deep learning: Listen more, risk more, learn more

by Alan November of November Learning | NovemberLearning.com @Globalearner

Have you ever taught a lesson really, really well—but not all of your students got it right on the test? Or, as a student, were you ever surprised that you completely blew a question on a test? Stacey Roshan is one of those teachers who cannot accept that her students fail when the material has been covered in class. Stacey's response to this universal dilemma is to leverage emerging technologies to learn more about how, when, and why her students make mistakes—and her techniques have led to deep learning of difficult math concepts.

Many of Stacey's processes are counterintuitive to how teachers were taught to teach. In her blended classroom, there is less transfer of knowledge from the teacher, more conversations of problem solving among the students, and more listening and learning by the teacher about how students learn. All of this represents a major shift of control to the students, resulting in deep learning on their part. Various tools and a robust online community makes all of this possible and manageable.

Stacey teaches AP calculus at the Bullis School, an independent coed day school in Maryland. Stacey's journey to shifting control began with the simple step of recording her lessons with screencasting software to enable her students to have limitless review of the material. Students were helped by this video library, but many still struggled when it came time to take the test. To facilitate deep learning, she then shifted her thinking to learn more about how her students learn rather than focusing on how to deliver her knowledge.

Her video library did provide students with time to work on problems during class, then go over the results together. In the past, she would have spent time explaining the correct way to solve problems. One of the biggest shifts she has made is to spend a lot of time going over incorrect answers—dissecting them to reveal why they are incorrect and where that student's thinking went wrong.

Stacey reflects: “Until students began working on problems themselves, the types of questions they would ask were very surface-level questions. It was very rare that we got to those deep learning analysis questions, because they were trying to process something new, and they were trying to write it down. I knew that was a problem.”

There is research that suggests un-teaching students’ mistakes and fixing their misconceptions is extremely beneficial. If you only show the right way to solve a problem, students still might not understand. But if you break the problem down and say, “This is where you went wrong,” that’s really powerful. Stacey has found great success by doing just that—and technology is what makes this approach possible.

Stacey uses Pear Deck, a web-based interactive presentation tool, to project students’ work anonymously to the class. Each student has a Wacom tablet connected to a laptop. The tablets allow them to solve problems by writing out their solutions. Using Pear Deck, Stacey creates a live presentation session that students can join from their own devices with a passcode. She can see her students’ work with a dashboard view, and she can isolate and project a student’s work anonymously for the whole class to see, so that she can discuss it with the class.

Before she had this technology available, when she would have students raise their hand or come up to the board to solve a problem, the responses were “tied to a specific student,” she says, “and I didn’t feel as comfortable calling a student out who was doing something incorrect.” But now that it’s anonymous, “it allows us to have these conversations about the incorrect answers and why those mistakes were made, why those students were thinking along those lines—and digging into why it’s incorrect. I would say that’s one of my favorite parts about using Pear Deck and using technology.”

Not only is Stacey able to lead a much richer discussion that results in better learning, but every student is participating.

“It’s not just about calling on one student, or having one student some up to the board and do it. Everybody’s participating, instantly and in real time,” she says. “We’re not just discussing one student’s result; we’re discussing the whole class’s results. The level of participation we can have is (phenomenal), and I think our discussion goes to a whole new level.”

Stacey also sets aside class time for her students to work together and help each other understand the material. And she sets this expectation from the outset, within the first five days of school.

“I stress that this is not going to be a class where you are learning on your own and just doing your own thing,” she explains. “This class is all about helping and learning from one another. If you’re working faster along, that’s your opportunity to help someone else. I also tell them that when they are taking someone else through a problem and explaining how to solve it, they are strengthening their knowledge in more ways than they could by doing 50 problems. By explaining how they do it, they’re really analyzing their thought process. They’re breaking it down, which is such a high-level skill.”

As students are collaborating, she walks around the room and listens to their conversations. “By hearing where they’re coming from, and how they get from step A to step B, I get such insight into where there is confusion,” she says. “I get to hear whether or not they are deeply understanding. Before, when they were just handing in work, I didn’t know if they did it themselves or had help from somebody else.”

In Singapore, they have this mantra: Teach less, listen more. Stacey practices that idea in her classroom. By having students helping other students, she is learning more about each student’s thinking.

“I think the worst thing in the world is when a student does poorly on an assessment, and you weren’t able to call that ahead of time,” she says. “As a teachwelcoe

er, I really hate those moments—because it makes me feel I wasn’t listening enough.”

Stacey also teaches an online section of AP Calculus. To replicate this practice with her online students, she has them take part in Google Hangout sessions in groups of 2-4 students, where they are discussing problems and solutions—and she assesses those conversations via video, which I think is brilliant.

“They record and submit (those sessions), and I hear how they’re approaching the problems,” she says. “I absolutely adore that component of my class. It’s very time-consuming, because you have to listen to those recordings. But it’s so valuable to me. It allows me to jump in so many times (and help them fix their understanding) before an assessment.”

In a result that defies conventional wisdom, Stacey says her online students consistently perform better than her face-to-face students, though all score well on the AP exam. She attributes that to the fact that her online students have learned to take more ownership of their own learning.

"They know their questions are only going to get answered if they ask them," she says. "And they are asking them." Often in her face-to-face classes, "students wait for me to open their books and get started for the day. In the online environment, I'm never going to tell them that. They are taking responsibility for that. That has been really remarkable to me."

Empowering students to help each other, required Stacey to let go of some control over the conversations in her classes—but it has resulted in much more powerful learning for her students.

"When you're sitting in the passenger seat of a car, you could go somewhere five times when somebody drives you, and when you get in the driver's seat, (you don't know how to get there yourself)," she notes. "You need to practice it yourself, you need to make those connections yourself." And that's what shifting some of the control to her students has empowered them to do.

Stacey will be presenting two sessions at the 2017 Building Learning Communities conference in Boston July 26-28. To learn more or to register for this event, click here.

Alan November is the founder of edtech consulting firm November Learning. Join Alan in Boston July 26-28 for his 2017 Building Learning Communities edtech conference, where hundreds of education leaders from around the globe will gather to discuss the world's most successful innovations in education.