



Tech Teaching Tips

Advice for Pharmacy Technician Educators

Tips for Making Learning Last

As an educator, you work hard to prepare your students for life outside of the classroom. The skills and knowledge that you impart in your classes will stick with your students as they move on to careers in pharmacy as technicians and maybe even as pharmacists. At least, that's what you hope. Research on learning has shown that students who study by "massed practice" (i.e., by rereading a text over and over or by cramming for an exam the day before) hardly ever retain the bulk of the information they studied when the semester is over.^(1p3) Alternatively, "retrieval practice" (i.e., recalling facts, concepts, and events from memory) is a much more effective form of studying.^(1p3)

Showing students how to study the material for your class can make the difference between a good student and a good pharmacy technician. Although your best student may know the answer to every question in class and score the highest on every exam, he or she may not be able to apply that information in a real-world setting.

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Teaching Adults

Teaching anyone anything is hard enough, but teaching adults comes with its own unique set of challenges. It can be particularly challenging when your class is made up of people ranging in age and educational, cultural, and social backgrounds. Not only do you have to cover the material they need to perform as a pharmacy technician, but you also have to make sure they actually *learn* the material. It can be overwhelming, but there are some steps you can take to ensure that your class is a success.¹

- ***Diversity is a good thing.*** Try not to look at the wide range of age and educational, cultural, and social backgrounds as something to be dealt with and overcome. Think of it as a useful tool in your lessons. People learn best when they can relate the material to past experiences, and people who have had a career (or two) before, or who have lived in another country, have a distinct advantage in this instance. Perhaps an older student has had experience as a patient and has had to deal with pharmacy

technicians and pharmacists in that capacity. Similarly, a student from another country may have a unique perspective on the healthcare system in the United States that sparks lively discussion about the role pharmacy technicians may play in the future.

- ***Everyone is welcome.*** Like younger students, adults need to feel safe and respected in class to learn the material effectively. Make it clear from the first day of class that everyone is welcome, regardless of who they are, where they are educationally, where they came from, or how old they are. Make a point of welcoming students as they enter the classroom and show them that you are glad they are in your class. Preparing games and activities in which students have to interact and cooperate with one another can foster trust among classmates.
- ***Have a plan.*** When students know that you have a plan for the class, they are much more likely to be engaged in what you are doing.

Writing the plan for that day's class on the board makes students less anxious about what to expect during the class. It also gives you a visible guide to class discussion, so if one student goes off track, you can easily refer everyone to the plan on the board to get back to the main topic. Having your plan in



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Teaching Students to Embrace Failure

Most students will do everything they can to avoid failure, or even the appearance of failure, for obvious reasons. It can be embarrassing for students to fail in front of their classmates and teacher, and for many students it gives them a feeling of incompetence and even shame. It does not have to be this way, however. Many studies have shown that failure, when followed by immediate and corrective feedback, is instrumental to lasting learning. For instance, in *Make It Stick*:

The Science of Successful Learning by Brown et al., they found that “trying to solve a problem *before being taught the solution* leads to better learning even when errors are made in the attempt.”^(1p4)

In a previous issue of *Tech Teaching Tips*, we told you about a concept called metacognition. *Metacognition* is the act of thinking about how you think. By reflecting on the way that you think, biases you may hold regarding the topic you are trying to learn and considering what

you already know in light of new information, you can examine perceived failures in the light of inquiry. Ken Bain, in *What the Best College Students Do*, found that “people who become highly creative and productive learn to acknowledge their failures, even to embrace them, and to explore and learn from them.”^(2p100)

Teach students to view their mistakes more like failed experiments—we tried one answer, it didn't work, so now let's use what we know doesn't work to help us find the right answer.

Helping your students to feel comfortable taking risks in the classroom is one of the most

From the Publisher

For those of you who have read our first two issues, you may have noticed a trend. To create each issue of *Tech Teaching Tips* we seek out, read, and then digest the best books we can find on teaching and learning. There has never been a more exciting and dynamic time in publishing about what works, and what doesn't work in the classroom. I am currently reading the new book by Elizabeth Green, *Building a Better Teacher: How Teaching Works and How to Teach It to Everyone*. We will be highlighting this book in a future issue.

Given the multiple responsibilities and challenges that you face each day as a pharmacy technician educator, it is difficult to find the time to add additional reading about the job of teaching to your “To Do” list. We hope that *Tech Teaching Tips* can help you stay current on the best thinking on how to be a better teacher, run a better and more stimulating classroom, and train the best pharmacy technicians possible.

In this issue, you will find three articles that we hope will help every technician educator. As always, we value your comments and suggestions.

Jack Bruggeman

Director, ASHP Special Publishing

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Try the following tips for helping your students’ learning last as discussed in *Make It Stick: The Science of Successful Learning* by Brown et al.:

- **Quiz early, quiz often.** “Learning is more durable when it’s effortful.”^(1p3) Rereading a text over and over can make it seem like you are learning the information, but what you are really doing is memorizing the text. Trying to recall the information from memory is harder and therefore creates a more lasting and meaningful pathway to the information in your brain. Quizzing students multiple times throughout the semester gives their brains a workout and consolidates the information they are learning. It also puts less pressure on students to ace big tests because their grades will be more spread out over quizzes that are not worth as many points.
- **Have students self-test.** Testing or quizzing does not have to happen only in the classroom. Show your students how to prepare their own quizzes for studying at home. Turning chapter headings and subheadings into questions and then trying to answer those questions from memory is a good way for students to quiz themselves while they are studying. You can also prepare some at-home quizzes for students to practice with. Self-testing has the added benefit of showing students where their weak spots are before they are faced with a test that comprises a high percentage of their grade.
- **Interleave subjects.** By studying one subject, then stopping before really understanding it to study something else, then going back to study the first subject again, makes it harder for your students’ brains to retrieve information. Although this “feels less productive . . . the effort produces longer lasting learning and enables more versatile application of it in later settings.”^(1p4) Interleaving subjects while studying will make it easier for your students’ brains to later distinguish between problems or situations and make it easier to decide from the available solutions and choose the correct one. For instance, if you interleave practicing ratios with how to convert grams to milliliters, it will be easier to determine, on a test, which problem you have encountered and how to solve it.
- **Personal reflection.** Leave some time at the end of the class period for students to write down a personal reflection on what was covered in that day’s class, what they did and did not understand, and how they might study for a test

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the same spot every day keeps you accountable during class. If you spend too much time on one topic, your students can see what they are missing in the remaining topics.

- ***Students have lives, too.*** It is very important to remember that adults have to contend with work, family responsibilities, and other day-to-day worries that may interfere with your class. Be sympathetic with your students and make sure they know that you understand they have lives outside of the classroom. Although you have to be consistent when enforcing

absences and late arrivals, try to offer incentives to get students to come to class as often as possible and to arrive on time. Do something meaningful at the start of class, like offering to answer questions about the homework, which “rewards those who come on time without unduly punishing latecomers.”^(1p101)

Reference

1. Spalding D. *How to Teach Adults: Plan Your Class, Teach Your Students, Change the World.* San Francisco, CA: Jossey-Bass; 2014.





“Embrace Failure” continued from page 3



I've not failed. I've just found 10,000 ways that don't work.

—Thomas Edison

important roles you have as a teacher. Create a classroom environment in which students feel safe and are therefore willing to take risks and to tackle challenges. Here are some tips for creating a safe space for experimentation:

- Make it clear to students on day one that teasing or heckling other students when they give a wrong answer is considered bad conduct and follow through with appropriate punishment when this occurs.
- Show students how you have struggled with the material and share with them the steps you took to get to the correct answers.
- Reward good effort as well as correct answers.
- Make a mistake on purpose and let the class correct you. Use this moment to show your students that everyone can make mistakes and show them how they can use their mistakes to better learn the material.

Research shows that “those who believe that intellectual ability is fixed from birth are more risk-averse, whereas those who believe that intellectual ability comes from hard work and effort are more likely to seek challenges and to persist at them.”^(1p92) Help your students understand that they can grow in their intellectual ability by embracing their failures and seeing them as “turning points along the path of mastery”^(1p91) rather than comments on who they are as human beings.

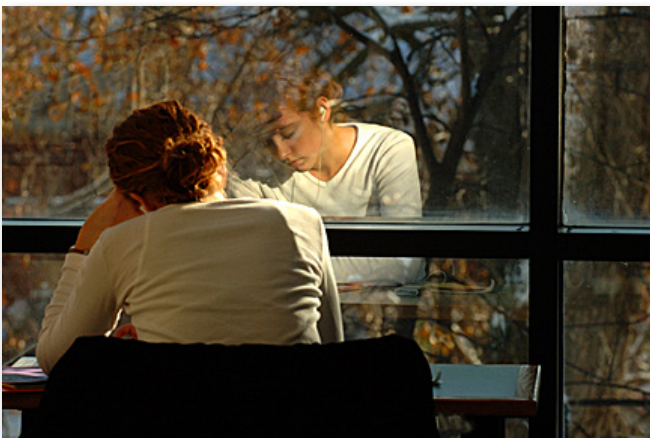
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1. Brown PB, Roediger III, HL, and McDaniel, MA. *Make It Stick: The Science of Successful Learning*. Cambridge, MA: The Belknap Press of Harvard University Press; 2014.
2. Bain K. *What the Best College Students Do*. Cambridge, MA: Belknap Press; 2012.



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covering that topic in the future. This task forces students to think back on the material, synthesize their own understanding of it, and make a plan for how to approach the material in the future. It also requires them to restate the material in their own words, therefore consolidating their mental pathways and making the information more easily retrievable in the future.



Reference

1. Brown PB, Roediger III HL, and McDaniel MA. *Make It Stick: The Science of Successful Learning*. Cambridge, MA: The Belknap Press of Harvard University Press; 2014.



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We want your ideas!

Have an idea for a story? Have a teaching tip, suggestion, or technique to share? Send your ideas and suggestions to:

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If you haven't seen the previous issues of *Tech Teaching Tips*, please email Amberly Hyden.

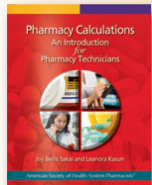


ASHP Pharmacy Technician Education and Training Resources

For information on these and other resources for technician training go to: www.ashp.org/menu/InformationFor/Technicians.aspx.

To review an exam copy for adoption consideration, contact Chris Jezowski at cjezowski@ashp.org or go to: [Request an Exam Copy](#)

The new third edition of *ASHP's Model Curriculum for Pharmacy Technician Education and Training* can be found here.



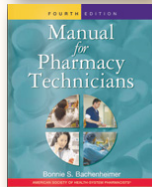
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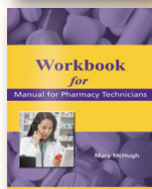
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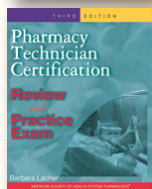
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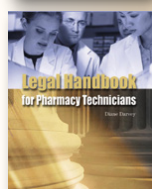
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