



*a podcast about
how we learn,
how we teach,
and how they overlap*

Episode 3: Learning is Not a Race

Adam: Hi. I'm Adam Sanford. I'm an academic life coach and professor in Los Angeles

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Adam: This is Learning Made Easier. A podcast where we discuss how we learn and how we teach and how they overlap.

Dinur: Welcome back to Learning Made Easier. This is episode 3. We're going to talk about how students need to slow down. Learning isn't a race. We know everything takes time to become proficient or even more time to master something, but students are conditioned to rush. How do we help them slow down? And also, how do we explain to them why it's important that they slow down?

Adam: So our whole world is rush, rush, rush. It doesn't matter whether you're talking about school or work or, heck, even getting from point A to Point B. We feel like we should get there as fast as possible, as rapidly as possible.

We all have what - I found this article on KQED.org about Barbara Oakley, who is an engineering professor, and she wrote a book about learning how to learn. But one of the first things she talked about was that kids, especially younger kids - KQED is more focused on middle school and early high school - is that these students often feel like they need to rush. They need to really rush. The problem is that when you rush, you don't get any deep understanding. This is very much a high school model of learning, where you are cramming in all the knowledge. She calls this "the race car brain," where you're running on overdrive and you're trying to get everything fast, fast, fast. A lot of students, because they have been conditioned to believe that memorization is what learning looks like, they race through the material. They want to get it done as quickly as possible.

I've had students who've asked me "how do I do this so I only have to watch the video once?" and I tell them, "you can't." They're like, "well I need to! I don't have enough time." I'm like, "that's an issue that we'll talk about later in class," and we do. We'll talk about how to manage time in later podcast episodes.

But the problem is that when you're a racecar brain you don't really see any of the details. You don't really get any of the depth. So Oakley, she makes the differentiation between the "race car brain," which is the focused mode, where you're just doing everything you can as fast as you can, and "the hiker brain," which is the diffuse thinking where you allow your mind to wander, you allow it to imagine, you allow it to daydream, you allow it to pull in

different kinds of information to make sense of what you're trying to learn.

We have these students -- and we have teachers, too -- who believe that you should just cram, cram, cram, and move, move, move.

The other thing is that students, according to Oakley, tend to equate speed with smarts: the faster you do it, the smarter you must be. The thing is that trying to be a fast learner often means that you are not a good learner, or that you're not an effective learner. Sure, you've seen all those terms and you know the basic definitions. But that's it, you couldn't apply them if you tried, because application takes slowing down. This is not just for students.

Dinur, you just put something in the notes and I want, I want you to share that because I think that's amazing, this observation.

Dinur: When we when we think of the race car brain, we're speeding through material, we're not going in-depth very well into it. Well, to me as an instructor, that's "teaching the course." I have this list of chapters I want to cover, and damned if we won't get through all of them in fifteen weeks.

But, if my students aren't understanding something, what good does it do me to go through all of those chapters? It's not going to do them much good because nothing is sinking in. So where we put our emphasis is, are we focusing on teaching courses, in which case the material becomes the sole goal? Or are we focusing on teaching students, where retention and learning and development are the goals?

If we're focusing on teaching students, we need to learn to slow ourselves down a little bit. We need to teach them that it's OK to slow down. I'm speaking from experience right now. I'm a little bit behind where I thought I'd be in one course, but I'm good with it, because I want my students to make sure that some of the basics really seep in, because I think they will use this material in the future - whether it's my class or someone else's.

Adam: I've also faced this as a teacher where I get excited and I speed up and talk faster and faster, and pretty soon my students feel like they're trying to capture what an auctioneer is saying, that's how fast I'm talking. So I made some adaptations to my course: I flipped my classrooms, and I put my lectures on video, and I forced myself to read from a script, so that I would read slowly, and so that I wouldn't sound like I was running ahead of everybody else. That was hard for me, because when I get excited about a topic I speed up it's just a natural thing and most people probably do this. When you're excited about what you're teaching it shows but it also makes it much harder for the students to take notes.

So if you know that slowing down is not possible for you in the moment, then provide the students avenues to get that information where you're not rattling on like an auctioneer, where they can at least pause you. So make a video or make a podcast of what you want them to learn, and follow a script. For me I found that following a script with big line breaks between every line forces me to slow down.

Now the thing is that it's both students and teachers who need to learn to slow down. But students often say "how can I slow down? I've got so much to do."

Dinur: Yeah. There is actually something that you said that I wanted to build off of, where you said that students equate speed with smarts. I know that when I was an undergrad, there are definitely times I would take a test, I'd feel stuck on it, and I'd see students turning their tests in before me and I'd go "wow, they must be really smart. I must be an idiot, I'm not getting this, I'm stuck on this."

Now from the other side of that kind of barrier: Are there students who finished the test quickly and do well on it? Sure. Are there a lot of students who finish the test early and don't do well on it at all? Also yes. Sometimes speed doesn't mean you know something well, sometimes it's a student just wants the test over with, it wasn't their day and they just want it over. We see speed, we don't know how correct the answers are.

Adam: I'm not going to use the word in this podcast; I will use a euphemism. But there's a musical that I reference to my students. There's a musical called "Come From Away," where they're introducing all the main characters, and one of them is a local cop, a municipal cop, and his name is Oz, and he is talking about just before 9/11 happened, he's running his radar on Airport Boulevard where the kids are crossing the street to get school in this little town in Newfoundland. He says "if they're speeding, I'll pull them over and write them a warning ticket and I'll write STFD - slow the F down."

So I've told my students this in class, I've said "STFD folks, slow the F down, because if you don't slow down you're rushing, and if you rush you're not learning. You're just cramming - rushing and cramming are pretty much the same thing." I tell them that cramming is the only dirty word I won't accept in my class. It's the only four-letter word I'm not OK with.

So let's talk for a minute about the benefits of slowing down. If you slow down, your stress levels are lower. Lower stress means better retention. But the problem is, so many students go into study sessions stressed, that they really don't know how to slow down. Or they go into a classroom and they're stressed and the teacher doesn't know how to slow them down.

One of the things that I've started to do is just a little mindfulness practice with my students, where I say "OK, I want you to take two minutes and breathe four times." And they go "four times in two minutes?" and I go "No, each breath will have four parts to it, and you'll do this four times."

So you breathe in for four, and you hold that for four, then you breathe out for four, and you hold that for four. You do this four times. And it slows your body down, because when you slow down your breathing, when you start controlling your breathing, your body slows down. When your body slows down, it is possible for your brain to slow down, because part of the reason your brain speeds up is it's reacting to that "fight or flight" thing that you get when you feel stress, and then your whole body goes on alert.

Well, when your body goes on alert, you're going to rush, because you feel like you're in danger. A lot of students react to exams, or in-class writing, or anything where they have to do public speaking, like presentation, as a as a crisis situation. That's how their brain is interpreting.

Their hind brain that doesn't really understand "this is not something where I'm going to die if I don't pass this exam" because it feels like they will. It really feels like this is a life or

death situation. So if you can lower your stress levels by slowing down it'll increase how much you can retain, and if you can retain more, that means you've you learned more. If you learn more, you'll do better on exams. So that's the first benefit. The second benefit is that you get deeper learning. Dinur, I think you were going to say something about this earlier.

Dinur: Yeah. So when we slow down - and slowing down doesn't mean you ignore doing work. Let's get this straight. But when you learn to slow your thinking down, it allows you to analyze things, and that's a different type of learning than what a lot of students are exposed to in high school. It's a type of learning that we as college instructors are trying to really, I don't want to say enforce, but, I guess, pass along. We want you to be able to take data, for example, and know what it means. You're doing research? We want you to learn how to do research and doing good research takes a long time.

Adam: Even in math classes - a lot of students think that math is just memorization, but it's not. When you are in a math class, like, say, you're in a calculus class you need to know which equation is going to answer this question, and why. Just knowing how the numbers work isn't enough. That's kind of like the math version of memorization. I can do this. I've got the numbers memorized, I can do this thing. But why? Explaining what that result means - that's a whole different set of things and that may take more time. You may need to sit there and think why am I using this equation? What does it do for me?

When I teach statistics I go through each of the equations that they're going to need whether it's for a t-test or a linear regression or whatever it is and I say this is how the math works, this is why the math works. This is why we're doing it this way. It's not just random numbers that someone threw at you. Here's the reasoning behind it.

That's the deeper learning where you're not just learning the Civil War happened between 18 whatever in 1865 it ended and it was about this. If all you learned is it was about slavery, there's a whole bunch of other things that are deeper ideas, that you also need to be learning when you get into college, that you didn't learn in high school. Because it was about slavery. But why was it about slavery? Because it was about economics, because slavery was a very big economic thing. It was also a very big cultural thing. If all you know is "oh it was about slavery" and that's all you know, then you've got surface learning but you don't have deeper learning.

Deeper learning takes more time and we don't often allow ourselves to take the time to learn something of that depth. The thing is once you get to depth and once you've learned it in depth it lasts longer. It sticks beyond the exam.

So cramming is just "I want to throw it up on the exam and never think about it again." I've had students when I've talked about cramming is not a good thing and I've asked what did they think learning look like. They always say "well I always thought that learning meant remembering all the things the teacher said in class and then passing the exam." I ask them "do any of you remember any of the things that you learned that way?" and they go "no." Then I say "well then you kind of wasted your time and your money didn't you?"

I mean if you're going to go to college part of the goal is to remember what you learned. But you can't do it if you're just rushing through it and cramming it. So getting longer lasting learning is really, really important.

Dinur: And it's one of the toughest benefits to really sell people on because it's more of a long term thing. It's something that we hope students go, "oh in hindsight yeah that class really helped me do X Y and Z." But we know that in the moment they're not going to see it because they haven't advanced beyond that class at that time yet.

Adam: I've had students come back to me, 2, 3 years later and say I never thought that I would ever use what I learned in your blah class. But it's applying to everything I'm doing in my job, it's applying everything I'm doing in my other classes. I say yes, sometimes it takes a few years to see the benefits. But if you learn in a slower, more paced, more diffuse way actually according to Oakley's terms, you will actually remember more, you will retain more, you'll be more informed than you were before.

So teachers, let's talk about how to put this into your classes, and then students, we'll talk about how you can use this information.

So the first thing is give your students some kind of guideline for how to slow down. A lot of students have no idea how to slow down.

Dinur: So teachers one thing that we can do is we can make our assignments reflect the need to slow down in class. One thing that I like to do is I ask my students to give me in-depth descriptions or in-depth analysis of something that can't just be answered with something that they memorize. The way I do that is I have my students write a term paper and I offer them time in class. We work through the papers together. But the idea is they have to take the time to really show me what material says and they have to take the time to be able to show me why they are saying what they're saying. How are they analyzing something?

One thing that we also need to do as teachers is we need to allow the idea of repeating or repetition or going over skills over and over and over again as a way to develop them. Because, if we're going to use a sports analogy, the best players become proficient and master their plays because they've practiced it hundreds and hundreds and hundreds of times. They've taken the time to learn how their teammates are going to be, where they're going to be, what they need to do that. That takes a lot of time and a lot of repetition.

Adam: Teaching students how to practice also forces them to slow down. I have actually reached students who really didn't see the point of practicing - they wanted to get it one shot and done - by saying "what would you tell the person who's going to be doing a concert? They're playing the guitar in a concert, shouldn't they practice before the concert?"

"Well,yeah."

"OK, well then, why aren't you practicing for your concert?"

"What do you mean?"

"Isn't the test your concert to show how you know what you know?"

Then they go "Oh yeah."

I've had students who are athletes say "I never realized I had to treat studying like a sport.

That makes it make a lot more sense” because the idea of repetitious practice, if you’re an athlete or musician, that’s just like “oh, well, of course I have to practice. If I don’t practice I’m not going to be good at the game, or I’m not going to be good at the performance.” But they don’t connect that to studying is also a form of practicing what you know, so that you can perform well on the exam.

So another thing that you might want to do as a teacher, folks, is to let the students learn - or teach the students how to pace and spread out their studying.

A lot of students that I’ve interviewed will say, “well, I study the day before the test.” You should be studying like a week before the test, and you should do it - we should do spaced repetition, where you are studying and then you check and see if you know it. Then you study something else and check it, see. And you study in different ways. Where a lot of students just do the read and reread right before the exam. Reading and rereading doesn’t get everything into your head.

We also have a podcast episode coming up in more detail where we’ll talk about methods of studying that students need to know, in order to really get that information solid in their heads. But it can’t be done in one shot. You can’t do in a cram session. If we don’t teach them how they won’t know. So that’s part of what I do.

In class I teach them a study method that I learned from my mentor Gretchen Wegner, and I say “this is why reading and rereading is not going to help you. This is why you need to use other methods” and then I list a bunch of other methods. Those will also be you know upcoming podcast episodes, because we only get, like, 20 to 30 minutes per podcast episode.

So, Dinur, let’s talk more about the ways that students can use this information about “you gotta slow down or you’re not going to learn.”

Dinur: One thing that I want to start out with is going to sound a little counterintuitive and that’s the idea of self-care or conscientiousness. And that’s being aware of yourself and being aware of others. When students rush, when they’re trying to blitz through material, they’re trying to get a lot of surface level learning and it helps in the interim. If they remember something then they have a little bit more knowledge than they did before.

But it’s not going to be a very deep-seated knowledge. It’s going to be very temporary. It’s not going to be something that months or years or semesters later they can draw it and say “oh right I remember this material and this is why it’s relevant.” So as students, one of the things I suggest is to be aware of yourself. Try and take an outside look, a third person view of yourself, a holistic view, and say “OK this is what I as a student am doing. Well how do I want to get better?”

I’m not trying to get you to beat yourself up. You don’t need that, but what you want to do is, you want to give yourself an honest assessment and say, “here’s what I’m doing well, here’s what I’m struggling a little bit with, and here is how I slow myself down so that I’m not struggling as much.”

As teachers our goal isn’t to trip you up. It’s to make sure that you’re learning and developing and part of that is learning to take the time to really have material and skills sink in.

Adam: I will say also that a lot of students will rush because they feel confused, and because they feel confused, they feel like that means that they're stupid. So I want to tell you, Josh Kaufman, who wrote a book on Rapid Skill Acquisition discovered from his research that it takes about 20 hours to get competent at something, where you could like play a musical instrument well enough that you could fake-play all of the popular songs, or speak a language well enough that you can at least interact with people who speak that at a nominal "I can find out where the bathroom is" level.

But what he also noticed was that for six to eight hours of acquiring a skill, when you're -- even when you're doing focused practice and really paying attention -- you're confused as heck. It's going to be very confusing, you're going to feel like you're dumb, you're going to feel like you're stupid and that's because your brain hasn't yet built storage space for what you're throwing at it. So all that information that's coming in, all this new stuff that you've never dealt with before. Think of the -- think of your mind like a living room. It's piled all over the living room because there's no place to store it.

Meanwhile your brain's over there busily building bookshelves to stick that stuff in, but it takes about six to eight hours of focused work before that confusion passes, and you have bookshelves, and all of a sudden it begins to make sense. Suddenly it clicks. So you must allow yourself that time. You cannot rush those eight hours. You cannot rush through them. You have to you have to do the work and be patient with yourself and accept that confusion is a thing that happens when you are learning something brand new.

So if you're learning something that's in your major, this probably won't take as long. But if you have to take a class outside your major, like a general ed course -- you're never gonna take another math class if you can avoid it and you're an art student, but you've got to take this math class. Well, for the first six to eight hours, you're going to be very confused because math is not the thing you use. It's not something that you're interested in, and it's not something you have a lot of background on, so there's no bookshelves for it. So there is that thing that you need to think about as well.

I've had students say well "I always feel like I'm done, I turn it in and then it's horrible." So when you feel like you're done ask yourself "what can I check one more time?" I had a client whose biggest problem was that they would just rush through everything, because they just wanted to get it out of the way and get on with their lives, and then they would get D-s and Cs, and they wouldn't they wouldn't get the grades they should have been getting, or that they felt they should've been getting. When I said this to them, "you need to say "what can I check one more time?" They looked at me and they said "you mean enough is not enough?" I said "right, for you, enough is not enough."

Now for perfectionists, it's just the opposite. You can only check it 3 times and then you have to stop. But for this student, who's just wanting to zip through it, one way to slow yourself down is to put on a Post-It note something like "enough is not enough. Check again." Make yourself check your work two or three times before you turn it in, because you'll find mistakes. You'll find things that you that you made mistakes because you were rushing, and you'll be able to correct those. So when you turn it down you'll have improved work, which is the goal.

Dinur: Something you might want to do as well is, if you're looking at a test and you didn't do as well as you'd like, look at the mistakes you made. Were these mistakes because you

didn't know the material? Was it a mistake because you mismanaged time on the test itself? You are going to know how you make your mistakes, and how you do better. One tip that I give my students because their tests are online, they're take-home but they are timed. I tell my students, "the system will give you the questions in the order it gives you. I don't control that. But what you can do is read through all of the questions see what's easiest for you and attack those questions first. Save more time for the tougher ones." I've so many students that go, "you mean I don't have to answer the questions in order?" and I tell them "It was never in the instructions. You have to answer these, however many questions. But the order you do them is up to you."

Adam: Yeah. And another thing that I do like for writing questions or writing assignments, like your term paper I will ask students to make a list of common errors that they know they make because they get marked down for them all the time on everything they write. Then I say, "OK, once you've written your first draft or once you've written your second draft maybe you've got the draft and you want to turn that in, set it aside. Go get your list of mistakes you know you make, and then go look through your draft and find them. Because you will find that, oh yes, your love affair with the comma is showing up because you've got run on sentences, so fix those."

Or, if you know that "thus" and "obviously" and "however" and "therefore" are words you just love to sprinkle through a paper, limit yourself to one per five pages. I speak from experience. My master's thesis has so many "however's" and "obviously's" that you could probably take it, boil it and you'd have three pages that were just "however" and "obviously," out of 65 pages - that's a little much.

If you have thumbprints - that you know these are your thumbprint mistakes? Make a list of mistakes you know you make, and then, before you turn in the assignment, go through the assignment and find those mistakes and correct them. Like, if you know that you always mix up accept and except, or affect and effect, or they're, there, and their, then go through your paper and make absolutely sure that you're using the words you mean - search for "there." Search for "accept," search for "except" and fix them.

Dinur: I'd like to include "two, too, and to," and defiantly versus definitely.

Adam: Yeah, defiantly and definitely that's a thing. We'll talk about big word mistakes that students make in another episode.

But the idea is that you make a list of the things that you know you have trouble with, and you know you make mistakes with, and then you double check.

The other thing you can do is, if you realize on a test that you're rushing, or that you feel overconfident, like, "oh I got this" -- that should be a cue to you, to make sure, double check. If you're studying and you're like "oh that's familiar I don't need to study it," it's going to show up on the test, and if it's only familiar and you can't explain it, it's going to sink you. So I've had students who I've told them if you get the feeling "that's familiar," remember familiar is not your friend. That's a cue to actually study it and make sure you can explain it.

So another thing that that I see here in our notes was that you've got to learn to view the mistake as an opportunity to learn from. because too many students see it as that means "I'm stupid" not "I didn't do well." This goes to the growth mindset and ethics mindset which

we will talk about. I believe we're talking about that the next couple of podcasts. You need to understand that when you make a mistake you have an opportunity to improve.

A lot of students also think that the teacher thinks, oh well, "if I got a C the teacher thinks I'm stupid." No we don't. A C means you're competent. A C means you got enough of it that you could move forward. Now if you've got a D, we're gonna be concerned, because we're gonna say "why is it that they are not understanding this? What is not clicking?" But at no time should you view a grade as a judgment of your self-worth, because it's not, and it's not a judgment of your intelligence either. It's just a judgment of what you did, not who you are. That's a really big distinction we need to make there.

Dinur: And it's also what you did at one point in time. Something that may surprise students, and I think often does, is your instructors, your professors made a lot of mistakes too. We were not perfect, and I don't say we weren't perfectionists but I certainly never got straight As. I don't think -- not even in high school, and I'm teaching college students. Yeah, so that means that mistakes are not the enemy, but you have to learn how to use them.

Again, I know I get a little sports heavy with the analogies, but when a player makes a mistake, the best coaches are there to say "OK, here's what you do next time. We're still giving you that opportunity to correct that mistake." It's a terrible message if you say "you made a mistake and you're off the team or you're benched." There are coaches that do that. That doesn't get the best out of your players. You don't want your players to play afraid. I don't want my students to be afraid to make mistakes. But I do want them to learn from the mistakes and if it's an issue of time, then I want them to take time and slow down a little bit.

Adam: Then finally some students say, "well, but then how do I get like the kids who can finish the test and do well fast? I want to be one of those kids. I want to be one of the students who can zip through it and do it right." Well, that takes time and repetition, and learning to speed up your ability to think through a test, to read and understand what you're doing, or whatever it is you're doing for class, is not the same thing as hurrying. It's not the same thing as rushing. If you start slower, and you start more methodically and you repeat what you're doing over and over again, and you practice it to get better, you'll do better than if you're trying to rush through or do too much too quickly.

Think of it like riding a bike: you fall off, you ride again, you fall off, you ride again. But each time you're riding a little bit farther - you get a little bit farther before you fall off. Eventually your body and your brain and your balance begin to say "oh, OK, this is how you stay on the bike for long periods of time." Then you start riding farther and farther and farther, but you still have to work up to it. You have to build up to it. The brain is a muscle, and you've got to build your brain up to that, just like you build up your muscles to that.

Dinur: I think a lot of students expect them to be kind of their final stage at the beginning of the term and they're not. We don't. One, we don't expect perfection in any sense of the word, and two, we know that at the beginning of the term you don't have the knowledge from our classes or your other classes that you would at the end of the term.

So we might ask you a question in class and say "can you think of why this might be?" in terms of a class discussion. But we know that you're at a certain stage in your development. We're trying to bring you along, so that at the end of the course you say "you

know, I started out at one level here, and now I'm a little bit higher, I'm up here.”

Adam: For teachers to go back to this will quick although it's not technically about rushing. You might want to give your students a knowledge assessment at the beginning of the semester and give it the same one at the end of the semester so you show them: this is how much you've improved. Because these with learning goals I gave you a test on them and you knew about three of the ten and then we got to the end of the semester now you know eight of the ten, you've improved enormously.

So I think that's all we can talk about right now without getting into stuff that we're going to be doing another episode. So is there anything else you wanted to add before we finish?

Dinur: No, I think that's it for us for this one.

Adam: So this is the end of Episode 3. Next time we'll be talking about how cramming is like intellectual bulimia - it doesn't help you at all.

[Theme Music]

Adam: You've been listening to Learning Made Easier, a podcast about how we learn, how we teach, and how they overlap.

Dinur: We want to say thank you to all of our supporters on Patreon who make this podcast possible.

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Dinur: We look forward to seeing you next week.

[Music fades]