

## **Making Learning Easier**

What Happens Next - 03.25.23

Larry Bernstein:

Welcome to What Happens Next. My name is Larry Bernstein. What Happens Next is a podcast which covers economics, finance, politics, and science.

Today's episode is entitled Making Learning Easy.

Our guest today is Dan Willingham who is a Professor of Cognitive Psychology at the University of Virginia. He is the author of the new book entitled Outsmart Your Brain: Why Learning is Hard and How You Can Make It Easy. We are going to hear about how to be smarter about learning new material in school and in life.

There is much to cover so buckle up.

I make this podcast to learn, and I offer it free of charge. If you enjoy today's podcast, please subscribe from our website for weekly emails so that you can continue to enjoy this content.

Let's begin with Dan's six-minute opening remarks.

Dan Willingham:

Larry, thanks very much for having me. I got interested in people regulating their own learning. I was really struck by the difference between pre-K and grade 12. Think about a child in Pre-K, our expectations of their ability to regulate their own learning are appropriately, pretty close to zero. No parent ever says to their child, your teacher called me and said, "you're not trying to learn your colors." It's a hundred percent up to the teacher to create an environment where children are going to learn. But by the time children are in grade 12, those expectations are actually very high.

We expect children in grade 12 to sit and listen to a long, complicated lecture and get something out of it. We think nothing of sending them home with complicated readings. They're supposed to know how to commit things to memory, to know whether or not they're prepared for a test. They have to plan their schedule, deal with procrastination. So, what was so striking to me is that no one's ever teaching them how to do these tasks that I just mentioned. And we know that no one's teaching them from surveys of college students. When you ask them did anyone ever teach you to study in a typical survey between 65 and 80% of them say no one ever said anything, and my hunch is that what the ones who say yes really means they were told a few study strategies. They weren't taught how to plan and how to deal with procrastination. The first thing to notice is

that they don't use methods that are very effective. Now, these students are in college. They're clearly not using disastrous methods to regulate their own learning.

Cognitive psychologists have learned a great deal about effective ways of accomplishing these tasks over the last 40 years. And they're certainly not using the more effective methods that we know about. The second thing that was really striking to me is that even though they have not all been told, here's the way to do it, there's a fair amount of uniformity. And when you look at the methods that they use, they all tend to gravitate towards methods that feel in the moment like they're working and aren't very difficult to execute. Now, that doesn't sound like bad poker on the part of students. Like, why wouldn't you do something that feels like it's working and doesn't feel too difficult? But in fact, that's not a great way to go. So, here's the analogy that I draw on the book.

Suppose that you have a friend who's trying to get stronger and one of their goals is to be able to do a lot of pushups. So one day you go visit them while they're training, and you find them doing pushups on their knees, and you say, why? If you wanna be able to do a lot of pushups, you should be doing regular pushups. In fact, it would be a whole lot better if you practice the really difficult pushups, like the ones where you launch yourself off the floor and clap and your friend says, "yeah, a couple of people told me that and I tried it, but I could hardly do any of those." And the point here is I'm trying to do a lot of pushups and look, when I do 'em on my knees, I can do lots of pushups and I can do 'em really fast.

So when students are doing mental work, and adults continue to use the same strategies when you're trying to regulate your own thought. Most people do the mental equivalent of pushups on their knees, and they're not recognizing you do need to challenge yourself. Not everything that feels difficult is gonna be bring benefit mentally, but the things that you would bring the most benefit are the things that most of those are gonna feel really difficult. So, I'll give you one quick example and that would be what to do when you're reading new materials where you're trying to learn something from what you're reading. The go-to strategy for students and most adults is to read it with a highlighter pen in hand and to highlight as you go.

And that it isn't very difficult. You're reading it anyway, and highlighting's not hard, and it feels like it's helping because you figure I'm noting what's really important. And so later, I won't have to reread everything, I'll have the important parts highlighted. The problem is when you're reading something in which you don't have a lot of expertise, you don't know what's important and what's not important. And one of my favorite studies, a bunch of the researchers just went to a student bookstore and got like 10 copies of the Introduction to Economics textbook, 10 copies of the Introduction to Psychology textbook. And they compared what students had highlighted, and they found there was no correspondence across copies. Everybody was highlighting something different. So that's just one example of this general principle that doing things that feel

like they're useful to you is, it turns out not that useful. And that's why I titled the book Outsmart Your Brain. And that's my six minutes.

Larry Bernstein:

My daughter attended Horace Mann which is one of the most academically challenging NYC private schools. At a relatively early age, teachers started to give assignments that were way beyond grade level. She was assigning clapping pushups. Everything was over the top, the readings and the essay assignments. The teachers had not taught my daughter how to write an essay, and she was overwhelmed. I tried to calm her down, helped her write an outline and encouraged her to go write her essay. The parent had to get involved. There's always a little tension between parent and child, I'll tell you that from experience. Why not give assignments at grade level with proper instruction instead of assigning clapping pushups?

Dan Willingham:

I'm not sure I would want to stand behind that analogy. You certainly can go too far in terms of challenge. I would say the parent shouldn't need to get involved most of the time. The school should be providing instruction for the students to do whatever it is that they're being asked to do. That's exactly what my point is. There's almost like a hidden curriculum running in parallel to the visible curriculum that you just tell kids, okay, and then on Thursday there's gonna be a quiz. Well, you're assuming that they know how to prepare for a quiz, but they probably don't. And so you just need to provide instruction. The teachers of your children should not have left them to fend for themselves. It's okay to give challenging work, but you have to provide instruction so that students feel like they know how to do it.

Larry Bernstein:

I took a statistics class with Professor DeVeaux at Penn my sophomore year, and I was assigned a project to do a statistical regression to predict freshman student's GPA. I used my fraternity's pledge class as my sample. One of my survey questions asked hours studied for class. I remember asking one of my best friends, how many hours they study. 1-5 hours, 6-10, 11-15, 16 to 20, and he said is that per year?

Larry Bernstein:

And I said, no, it was per week. And he said, I guess one to five. Now this is an ivy league school. National surveys show that studying has declined since then materially. Why are so many kids doing push-ups on their knees?

Dan Willingham:

Well, doing pushups on your knees is better than nothing. A number of people have said this to me, at least they're doing something. And that wasn't really the point. The point is about what's the most efficient way to spend your time. One of my favorite quotations is any analogy runs on

three legs. There's always some point at which it breaks down. What I think is most important to keep in mind is that the study strategies that students use, like they could spend an equivalent amount of time studying and just learn more and be more effective, or they could be equally effective and spend less time studying if they use more efficient methods. I'm sure that study time in that small sample you had probably did not come out to be terribly important in the regression, because there are lots of things that go into performance, not the least of which is what your preparation is going into the class, which also contributes a lot to the effectiveness of whatever study methods you use, the two interact.

My impression is that study time is down in both higher ed and at the high school level. That's not optimal. The students could be doing more.

Larry Bernstein:

I went to my New Trier High School 30th year reunion and took a school tour with the principal who also runs the English Department. I asked him what was new in the Honors AP English classes, and he said that they were dumbing down the reading assignments. Flabbergasted I asked why, and he said that kid's reading comprehension, even for the best students were down because kids read less in their free time. What do you make of that assertion?

Dan Willingham:

There are two points in there. One is the kids learn a whole lot from independent reading. The second is that independent reading has dropped. I would qualify both of those. So it's true that there are some surveys that indicate that leisure reading has dropped among teenagers. And this is where activities on digital platforms usually take the blame. I'm uncertain about those data because most of the surveys that you see are self-reported and their retrospective. They pose questions like, how many books have you read in the last year? That supposes that students can remember how many books they've read in the last year. And a question like that is of course subject to presentation bias, where I feel bad admitting to you that I haven't read any books in the past year.

So some of those surveys do show drops, and it may be, it just seems more acceptable today than it did 15 years ago or 20 years ago to say, I don't really read very much. Now, there's another reason to think that that might be the case because there are a much better data set comes from the American time use survey, which is a nationally representative sample that's done every year by the Bureau of Labor Statistics. And they use a diary method, so they have people at the end of the day record what they've done. And you have a much smaller problem with the possibility of presentation bias. Because even if I want to appear as a reader, I may not really be thinking about that. It's not primed in the way it is if you ask me about my reading.

Even a reader doesn't necessarily read every day, right? So those data show two things. One is that the data go back to 2004 to today, reading hasn't really changed among teenagers. And the second thing is, it's really been low all the time, and that's sort of comports with me as a kid who grew up in the seventies. My own personal anecdotal experience was it's not like my friends and I looked at each other and said like, what should we do? Well, we don't have the internet. Let's read Shakespeare. We found other ways of wasting our time. Now the second thing that your principal said is this is a key driver of vocabulary and reading comprehension, it's probably helpful for reading comprehension.

It's probably much less important for vocabulary. The reason is that when kids do leisure reading, they tend to read in particular genres. If you are a big fan of fantasy, then you're seeing a lot of rare vocabulary words, but they tend to be the same ones over and over again. The word wizard and dwarf in a way that other kids don't. There's less exposure to a broad base knowledge than you might think. This was a point made by Marilyn Jaeger Adams, and she used the example of the word Mars. Statistics on how frequently any word including the word Mars appears in general interest reading, it's surprisingly infrequent. And her point from this example was if you count on leisure reading for children to know the word Mars, they're probably not going to, but if they have a two week unit on the solar system in third grade, they will. The point being curriculum is what's really gonna give kids the background knowledge that is the main driver behind reading comprehension. Your principal was appealing to broader cultural forces outside the control of the school as the reason that the course needed to be dumbed down. And I'm suspicious.

Larry Bernstein:

In your new book *Outsmarting Your Brain*, you offer 94 tips to students to improve their performance. How did you think about organizing your book to make these suggestions?

Dan Willingham:

I thought quite a lot about how to organize this book because the whole point was that I wanted it to be useful for people who are trying to figure out their own learning. One of the mistakes that people make is they think of learning as this one step process, where I'm trying to emphasize there are lots of different things that have to go right for learning to be effective. Once you think about it that way, you may not have any problem committing things to memory, and your biggest problem is procrastination, or planning, or note taking or whatever. I wanted to organize it by task so that students could look at the part of getting their work done that was giving them trouble. Let's just offer lots of different options here of ways that you can improve.

Larry Bernstein:

Back to New Trier High School, in my freshman first semester English Class, Ms. Ambrozik gave us an in-class essay on the short story *By the Waters of Babylon*. Our teacher handed out

two A-papers as samples of what she wanted from the students in the class. I think that was the last time in high school or in college that a teacher handed out A-papers as a guide for us to learn from others or know what was to be expected. It seemed brilliant at the time, why is this not a standard part of the pedagogy?

Dan Willingham:

Well, we should. I'm pleased to tell you in the seminar that I'm teaching now, I provide students examples of excellent essays for the different assignments that I get. I try to break it down and talk in detail about. I mean it's not enough to just show them the final product that's better, but they don't know the method that the author of that paper used to get there. And you need to provide that as well. If you're asking students to do these things, it only makes sense to teach them how. You'll hear instructors express frustration that they come to me and they don't know how to write a good paragraph. So teach 'em, I don't care that you're a ninth grade teacher, and they should know that already. They don't. So teach 'em.

Larry Bernstein:

Dan, I have read four of your books and the reason and they are both interesting and well-written. You use humor and the writing is for a general reader and a joy to read. One of the books that I chose to read was your textbook on Cognition. This book I did not like nearly as much. Why do textbooks have to be written to be boring?

Dan Willingham:

Textbooks are written with a different purpose in mind. My other books are actually much more loaded with information than other nonfiction books are. If you pick up a typical psychology book that's written for the general public, something by Adam Grant or Malcolm Gladwell, it's stories, right? The Gladwell formula is every chapter starts with a story, then there's an experiment, and then at the end, what this means in your daily life. The stories make up the bulk of it. My books are unusual in that I don't tell a lot of stories. I'm not good at that. I'm somewhat less interested in that. I'm more front loading it with information. Textbooks are a much more extreme version of that.

There's no narrative component at all in a textbook. They're organized hierarchically, they're there to serve a different purpose. The books that I write though, they're information loaded. I well understand if this isn't interesting, nobody's gonna read this. But being interesting is not your main job as a textbook author, it's to cover the material. There's a hell of a lot of it, especially the book that you read is an introductory course. It's the very first course that you would take if you're interested in human cognition. Yeah, there's a lot of definitions. There's a lot to cover. And so that's why it ends up being organized that way. And another skill that students have to learn, students learn to read narratives, those are the first books that they encounter, and

students come in to pre-K already knowing the narrative structure that helps a great deal in comprehension.

Then when things switch and they start reading books that are more non-fiction, information delivery textbook type, those are structured differently, and they really ought to be taught how to decode them. I mean sort of tear them apart and figure out how they're structured and what they're doing. Most college students don't, when I ask my students, how do you read a textbook? I sit in a chair. I mean, like, what are you talking about? But that's not the most effective way to tackle information heavy book like a textbook.

Larry Bernstein:  
What is the right way?

Dan Willingham:  
You may have heard of the SQ3R method. There are lots of methods like that. All of them have a couple of properties in common. First, having a goal in mind when you're reading, there's lots of research on this. You actually read differently when you go into a text with a purpose in mind. And so, surveying the chapter, and especially useful for this is looking at the headings and the subheadings to get some idea of what this is gonna be about. Okay, here's what I'm kind of expecting.

I'm supposed to learn from this by the end of reading this chapter, here's what I think I should know, and some questions that should be answered. And then as you're reading, you have that in the back of your mind. First of all, were those the right questions? And if they were the right questions, am I getting, what are the answers to those questions that I pose to myself? That's especially effective because it keeps you thinking about what the material means. One of the great challenges, as we all know, we've all been in that situation where your eyes are just sort of skimming over. So you get to the bottom of a page and you're like, I was thinking about lunch. Like, I wasn't thinking at all about the content. So it's all very nice to say don't do that.

Think about meaning, well, it's hard to give your brain that command, but when you've got a concrete task, like, here are these questions, and I'm looking for the answer to these questions, it's much easier to focus on what things mean. So that's briefly what you should do. There's some other things that ideally you would do afterwards in terms of sort of connecting the different ideas that build up further connections among them that usually ends up being very important. That's how you get to sort the broader ideas and not just the nitty gritty pieces.

Larry Bernstein:  
At New Trier High School, I took a class in AP European History with a teacher who was retiring at the end of the term and who was incredibly lazy. He gave an exam which covered

material that was not covered in the text or in the lectures. The students were apoplectic despite a ridiculous curve. I asked the teacher what textbook he had used previously to Palmer and Colton, and he said Hayes. I went to the library and checked out the Hayes textbook, and sure enough all the test's answers were covered in that textbook. For the remainder of the semester, I read both textbooks. I found that reading two different textbooks was superior to rereading the same text. What do you think of using supplemental reading in lieu of concentrating excessive time on the same textbook?

Dan Willingham:

It's a wonderful idea. I would love to have you in the classroom. Meanwhile, your principal said we had to dumb down AP English <laugh>. Right? because no one's doing the reading. So supplemental material, it's true. I'll talk about something in class, and they'll go off and find stuff and read it, and they'll come talk to me about it. And it's wonderful and exciting that people are so interested. It's just rare.

I have different expectations. I'm teaching an undergraduate senior seminar now. So, these are all cognitive science majors and psychology majors. You should be pretty interested in this; if you're not interested in this, why are you majoring in it? And so my expectations accordingly are higher. I expect you to really do the readings with care. Whereas like in my introduction to cognition course that I teach last fall, I had 450 students. Some of these are freshmen who stumbled in here because it fit in their schedule, and they're really not that interested. And I'm just trying to make sure everybody gets something out of the course.

Larry Bernstein:

You mentioned Malcolm Gladwell and his book writing process. His work is extremely popular, and I have read most of his books. I want to give you an example of a chapter from his book *Blink* which I read when it came out nearly 20 years ago. The story he told was about a firefighter working to put out a house fire, and all of the sudden he screams out, "everyone out, through the door or the window if you have to." The fireman haul ass and get out, and moments later the building explodes. When asked why, the fireman said that it was an unconscious feeling that the fire wasn't progressing like normal and that he felt uncomfortable and thus demanded that everyone exit. This was the major argument of Gladwell's book *Blink* that the unconscious is a powerful force that we should all tap into. I was so mesmerized by the fireman story that I went to the footnotes and found the original source by Klein and read that book too. The Klein book was disappointing because it lacked a narrative. I was amazed that Gladwell could read the Klein's original material and then apply his masterful storytelling ability to make the scene memorable 20 years later. That is the art and his genius.

Dan Willingham:



Making sure that in the art, you don't misinterpret the science. It so happens I'm teaching Klein tomorrow in this seminar that I mentioned. I've got Klein's book on my desk. When you first said something, I didn't recognize that as a Klein story. So Klein studied firefighters, EMTs. His specialty is decision making with very high stakes and enormous time pressure. He's going to emergency rooms, he's following EMTs around. He's going to watch firefighters. And he's interested in the military and their ability to process for making decisions. So for me, Klein is absolutely fascinating, but I'm of course reading it from a different perspective because I'm putting it in contradistinction, especially to Kahneman and Tversky who talk about decision making in a completely different way.

Back to your question. There was a significant drawback to Blink, if I remember the book accurately, which is that there was a lot in there about the power of the unconscious. And walking away from that book, you could easily get the idea that you just need to quiet your conscious mind and listen to what your unconscious is telling you. What was omitted from that is, that when it works, it works in people who have enormous experience. It works in someone who has been fighting fires for 10 or 15 years. If you tried to quiet your mind and take control of a fire that would not be a good situation at all.

Larry Bernstein:

Let's contrast that with Kahneman who you brought up a minute ago. Kahneman won the Nobel Prize for Economics and is the author of the popular book Thinking Fast and Slow. What I found problematic about Kahneman's research is that he popularizes errors that people make when they see problems for the first time. And I don't think that is very important, because people can learn from their mistakes, they can ask questions from people who have experience, and businesses that continue to make mistakes go out of business and those firms that do the right things over time, succeed.

Dan Willingham:

Absolutely. And there's a researcher at University of College London, David Shanks, who has some pretty persuasive data that therefore some of the illusions that Kahneman-Tversky described. If you give people the right feedback, they stop making the decision making illusion. And Gerd Gigerenzer at the Max Planck Institute has criticized Kahneman-Tversky for many years, has been one of their main critics on the point that you are alluding to, which is, look, if we were all so terrible at making decisions, we'd be dead evolutionarily, the species just wouldn't survive. And so, the right way to think about the Kahneman-Tversky experiments is like visual illusions that this is way the system works. Instead, these are mistakes that we make occasionally in systems that are mostly quite good. Visual illusions are interesting because the circumstances under which the system breaks down can help illuminate the way the system operates.

Larry Bernstein:

A few months ago, we had an incredible podcast with the psychologist Robert Sapolsky from Stanford who said that there is no free will. And in your book *Outsmarting Your Brain*, you are trying to teach us how to hijack the little man in our head. What do you think of free will in this battle to tackle your own mind?

Dan Willingham:

I think Sapolsky's talking one step removed from the level at which I'm describing things, and to me, cognition is very hard to control. It's very hard to attend to what you want to attend. You can't remember what you want to remember. Deciding that you wanna remember something does absolutely nothing. And you do have limited control in guiding your cognitive system. And one thing you can do is set tasks for yourself, at least for some brief period of time, you will engage with that task.

What the book is about a bunch of tasks that are useful to set for yourself that will put you down the right cognitive path to achieve a goal, like comprehending what I read, or committing things to memory or planning my schedule or whatever it is. In terms of free will, these are questions that I don't think about much. I'm not old enough yet, Larry, when you get to be a certain age in psychology, then you start thinking about consciousness. That's what I've found. It's a little bit of a syndrome with a cognitive psychologist. We get interested in consciousness as we approach retirement. I'm almost there, but not quite.

Larry Bernstein:

I've been reading your books over the past two decades about why don't students like school, understanding how to read, and now outsmarting your brain. Is there a progression or plan to your research?

Dan Willingham:

I love the idea that there's a plan. It's been very opportunistic. It's sort of as things occur to me that I'm like, oh, someone should really say something about this. And, maybe I've got something to say, then I do it. So my next book is gonna be about thinking, and it's gonna be on the Kahneman-Tversky type decision making will figure heavily in it, problem solving as well creativity, so all of those topics.

I wish I could say, well, Larry, there's this arc to my work and there's a master plan, and I hope I live long enough to see it through. It's sort of like, okay, maybe I'll do this next. And that's about it.

Larry Bernstein:

You are trying to reach an audience for your ideas. You teach at the University of Virginia, you write books and hold seminars to get your ideas to teachers, what are you doing now to get your ideas in the public space?

Dan Willingham:

I started making videos on TikTok because this book is directed in no small part to students. I have some social media presence mostly on Twitter and a bit on Facebook. My publisher pointed out, students are on TikTok, you should be making TikTok, which I thought was a terrible idea.

I don't know how to video edit or anything, and I knew enough to know if you don't understand video editing, your videos just look awful, right? We actually had a guest in the department who's an expert in non-verbal communication, and especially how like people use pauses.

We started talking about the role that those play in video. And so a little light bulb went off over my head and I started asking her about video communication, and she said, oh, well if your main thing would be credibility. So, you should just make TikTok videos with no video edits at all, and you should leave in all the hemming and hawing because that's gonna make you just seem more authentic. I started making videos and first of all, I got a surprising number of views. One of 'em has like 2.4 million views. Several of them have several hundred thousand views. But even more important to me in a way of the comments, like people overwhelmingly middle school and high school students and college students, and people are just positive.

Larry Bernstein:

Dan, what are optimistic about?

Dan Willingham:

I'm optimistic about the prospects of the type of work that I've been doing. When I first got interested in education, there were not very many cognitive psychologists who were working in this space. And I got interested in it exactly because I thought this is the people that I'm reading, there's a real contribution for the work that they've been doing to improve education and make learning easier, make learning more interesting, and make it more productive. Close to 20 years now that I've been doing this work, I think that that perspective has really gotten traction. And I'm optimistic that it's going to continue to do so. It's not everything in education, but I think there's a real contribution to be made. I think we're starting to make it.

Larry Bernstein:

Thanks to Dan for joining us today.

If you missed this week's shows, check it out. Our first guest was Laura Hamilton who is a sociologist at UC Merced and the author of multiple books including *Broke*, *Who is Paying for the Party*, and *Parenting by Degree*. Laura is interested in how socio-economic status influences who goes to college, how students perform, their job prospects, and their marriage market.

Our second guest was Nicolas Veron of the Peterson Institute who discussed the run on the banks and the decision to guarantee the uninsured deposits at Silicon Valley and Signature Bank.

I would now like to make a plug for next week's podcast on the war in Ukraine with Stephen Biddle who is a Professor of International and Public Affairs at Columbia University. Stephen previously worked for General Petraeus in Iraq and General McChrystal in Afghanistan.

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I would like to thank our audience for your continued engagement with these important issues, good-bye.