

**Bonni** [00:00:00] It sounds counterintuitive getting students to learn more by thinking about learning. Today on episode 47, Todd Zakrajsek speaks with me about developing metacognition skills in our students.

**Production Credit** [00:00:14] Produced by Innovate Learning, maximizing human potential.

**Bonni** [00:00:23] Welcome to this episode of Teaching in Higher Ed. This is the space where we explore the art and science of being more effective at facilitating learning. We also share ways to increase our personal productivity approaches so we can have more peace in our lives and be even more present for our students.

**Bonni** [00:00:51] I'm so pleased today to be welcoming Todd Zakrajsek to today's Teaching in Higher Ed episode 47. Todd Zakrajsek is an associate research professor and associate director of fellowship programs in the Department of Family Medicine. He is also the executive director of the Academy of educators. Todd, welcome to the show.

**Todd** [00:01:12] Bonni, thank you so much it's really great to be here.

**Bonni** [00:01:14] Now the two roles that I just spoke of involve your work at UNC but would you share some of your other work that you do on boards and also some of your current work on research.

**Todd** [00:01:27] Oh yes so let's see here. Kind of keeping busy these days and so I'm also on the Microsoft board for a technology enhanced instructions as a TEI.

**Todd** [00:01:37] Also on the Journal of excellence in college teaching board. A couple other journal boards and several several publications like to do that one currently working also on a book series through stylus publishing on effective teaching. So just try not to be bored.

**Bonni** [00:01:54] I have been privileged to be able to watch your most recent TED talk. I don't know have you done more than one or was that the TED talk.

**Todd** [00:02:02] That was the TED talk it scared me to death it was so much pressure but I just I just want to do such a good job so I think I spent two weeks nonstop preparing for that 12 minutes. It was a lot of fun.

**Bonni** [00:02:12] Those are absolutely challenging and for people listening the show notes will be at [teachinginhigher.com/47](http://teachinginhigher.com/47) and I'll have a link into his talk because I think it's something when you can actually see someone and see what you're like as a presenter.

**Bonni** [00:02:26] I'm just incredibly impressed. And those are way harder than they look. But it's brilliant it's a nice nice work to look at the subject of metacognition which is actually what we're going to talk about today. But let's back up a couple of steps and start out by telling us about some of your unusually low grades in college.

**Todd** [00:02:45] Oh thank you. What a wonderful place to start as some of my failures in the past.

**Bonni** [00:02:51] Tell me about your failures today. No.

**Todd** [00:02:55] My biggest failure academically. Well actually you know I actually most of the talks I do give I start out with this quick little story of when I went off to college and I was a first generation college student so I didn't know what I was really doing and I didn't even know who to ask.

**Todd** [00:03:07] And so one of the things I love to tell people is that I started out looking at the college catalog figuring well you know you should be able to pick out your own classes you're in college and so it says to take a math course so I signed up for calculus.

**Todd** [00:03:19] And it said to sign up for a science course I took physics it said to have a lab course and I figured well you can't double dip on the lab course from physics so I better be sure I took chemistry with the lab and then I had a social science course I took psychology and then of course my actual degree was going to be in criminal justice.

**Todd** [00:03:35] So I took introduction to criminal justice. And one of my very first grades that I got was from my chemistry class and it was an F minus minus.

**Bonni** [00:03:44] Which I did not even think was possible and neither did you.

**Todd** [00:03:48] Well no I didn't. But the funny part is once you work with lots of different faculty and talk to a lot of different faculty and most of the listeners out there have had a wide variety of different faculty members. Anything is possible.

**Todd** [00:03:57] So I worked up the nerve to go talk to the instructor and when I talk to him I said I'd you know I don't even know what this is you know. Could you explain it to me and he said well given you received an F minus it doesn't surprise me. You fail to comprehend it. And I thought that was a little bit rude.

**Todd** [00:04:17] But it really started me thinking as the messages that we give to students and the message to instructors because I really wasn't there saying Could you explain the concept to me. What I meant was could you explain to me what this means in terms of the class and basically it boiled down to I had about a 38 percent.

**Todd** [00:04:32] I remember the exact grade but I think it was in the high 30s and the concept was could I even pass the course at this time. But instead of saying given this very low grade Do I have a possibility of passing the course. Instead he interpreted this other way.

**Todd** [00:04:47] And so this very day one student asked me questions like Oh here's one for you. I couldn't make it to class Monday did I miss anything. The students not asking you if she or he missed anything to which we might respond. Of course you didn't miss anything. You know we all just mourned your absence.

**Todd** [00:05:03] And how could you possibly have learning without you present. Because you know we get all these sarcastic things but it really boils down to is what the student wants to know is is there anything in particular that I should be prepared for for the next class.

**Todd** [00:05:15] Because I missed the last class and so much like this F minus minus is if a student ask a question and it hits me the wrong way I stop and say. Now let's talk about the way I interpret your question and how we might think about you asking it in a different way. If that's truly what you mean which is kind of a metacognitive process of asking a question.

**Bonni** [00:05:35] The other thing I'm hearing you say to is that you are assuming the best instead of assuming the worst and that there might be some better

reason why they'd be asking you a question like that because it can seem like a personal affront what do you mean did you miss anything.

**Bonni** [00:05:51] But if we assume that there might be something else there that I think that really helps us and I think the longer we do it the more we need to remember things like that too.

**Todd** [00:05:59] It's so true it's very very easy if one of the things and again I these days everything about is thinking about processes and stuff I just think that's where all the fun is. But you know any of these negative things are going to happen in life and if they do and is that's what we focus on if a cell phone goes off in class the easiest thing is say oh my gosh another cell phone.

**Todd** [00:06:18] Could you please turn off your cell phone. Well for that particular student just that individual forgot to turn the phone off. We've all done that at different times. It may be the first time in years that the student had a phone go off in class. But it might be your fourth one this week.

**Todd** [00:06:33] So instead of going after the students saying how dare you. It's more of what you were just saying. You take the positive approach and say look I realize you probably forgot to turn the phone off please.

**Todd** [00:06:43] So yes sticking positive and trying to move forward that.

**Bonni** [00:06:46] I have a 3 year old son and a 1 year old daughter and my 3 year old son is obsessed with looking at pictures on my phone or iPad or whatever he can get his hands on and the other day we were going through the pictures.

**Bonni** [00:06:56] And believe it or not he was very interested in the picture I took of my parking place at John Wayne Airport when I was flying out a few months ago. I know you actually think parking tells us something about thinking about thinking somewhere to share with us about that. And I think you can also attest that I'm not crazy for having taken that picture of the parking place where smart smart thing to do.

**Todd** [00:07:20] Basically in life you know we have all these things that we do and one of the things we have to keep track of or realize I guess is there's interference all the time and technically speaking there's proactive and retractor interference.

**Todd** [00:07:31] But what it boils down to is if you're put into a similar position and multiple times it can be very difficult to retrieve information from a specific time.

**Todd** [00:07:40] So if you park in the parking lot five times across five or six months at any given time on the fourth or fifth time you can come out and say wait a minute was this the time I parked on level 1 or is this the time I parked over by the elevator.

**Todd** [00:07:53] And so the smartest thing to do when there's kind of overlap like this or interference has to snap a quick picture with your phone or to stop and say OK I am in spot number 42 in section G3 and if you stop and do that you actually evoke kind of a process in your brain to keep track of that because the danger is if you jump out of your car thinking I'm going to miss my flight or I'm cutting it close or I hope I turned the iron off or whatever.

**Todd** [00:08:20] If your brain is kind of really occupied with other things you don't process that day to day stuff that we all process will through living.

**Todd** [00:08:28] And a couple of days later you come out of that airport and have absolutely no idea where you're part shooting the quick picture or just being cognitively aware of where you're at can be a very very helpful thing.

**Bonni** [00:08:39] One of the things I'm concerned about with students today although I always I always try to be cautious and not try to assume more in there in such a different place. I was so involved when I was in college because that's certainly not the case.

**Bonni** [00:08:50] But it just seems so much like they're in there just in the nick of time constantly living in chaos. And they do enjoy taking classes with me because I use a service called remind and I can program in various reminders in advance that will text message them and they like that but I think am I enabling them to go on never having a calendar.

**Bonni** [00:09:12] I get a little a little bit concerned about about that but are we in a different place today with today's traditional 18 to 22 year olds where they are just much more living in the moment. Stress of not being able to put a planner together or a calendar or a schedule or is that in my imagination.

**Todd** [00:09:31] Well I think the biggest thing to keep in mind is that you know when you talk about things like evolution and adaptation and all this good stuff

is it the brain doesn't change that fast physiology doesn't change in a generation or two it takes a while.

**Todd** [00:09:44] So you can certainly you know people talk about rewiring the brain and things you certainly can activate different parts of the brain. And you definitely can get better at certain things than the other so we can do some changes.

**Todd** [00:09:54] However the basic physiology of our brain looks the same as it did a very long time ago and not that long ago. This is the important part not that long ago our environment was set up more like it was thousands of years ago. That is for instance televisions TVs in my lifetime at midnight used to go off the air and they would not come back until about six o'clock in the morning.

**Todd** [00:10:20] And you know there would be that national anthem and then it would just basically go down to a little dot and then it would be snow. You couldn't go to the store shopping at three o'clock in the morning you couldn't call your friends at three o'clock in the morning or you could but it was considered extremely rude.

**Todd** [00:10:33] There was no texting and all of that there was no internet to surf so essentially you had nothing to do from midnight to 6 so the concept was I guess I go to sleep.

**Todd** [00:10:42] Nowadays at any given moment at any given place as long as you have a signal on your phone you can be actively involved in something which means essentially now our brains are never resting and because of that they are getting stressed. People are getting tired and the attention is getting divided and a lot of different directions.

**Bonni** [00:11:03] What else do we need to know about the idea of metacognition.

**Todd** [00:11:07] Well actually it's a pretty complicated term but the easiest one to do I really think and certainly we could have a great educational psychologist debate kind of thing but the two concepts are basically thinking about thinking and knowing when you know.

**Todd** [00:11:19] So the concept of knowing when you do know something is really funny. If you watch you can catch yourself so many times at a point where you say to yourself I thought I knew this to step back just a second or two

and you have in your head every every awareness that you knew something until there was evidence you didn't.

**Todd** [00:11:41] A quick example is you're going over to your friends house maybe you've been over there once or twice and they say you know how to get here and you say Yeah no problem. And all of a sudden you're sitting in the parking lot of a 7-Eleven with your phone and you start typing in the GPS you know the address to find the place.

**Todd** [00:11:56] At that moment you now know that you didn't know where it was but you certainly thought you did right up until you had evidence. So you can take this into academics. I can be reading a book and as I'm reading the book kind of like driving to my friend's house I might think that I'm getting this.

**Todd** [00:12:12] My eyes are going across there I'm processing all the words it all feels ok but eventually or I should say eventually there may come a point when I suddenly realize I don't know it that could be a test which is too late or it could be a quick metacognitive check which means I'm going to check to see if I know what I think I know.

**Bonni** [00:12:32] One of the compliments I get from my students is that I'm pretty good about bringing in current examples and I love when they can just feel the room come alive. And it's it's more like jazz music it's just you didn't plan this and people are asking questions he didn't even think we were gonna go there today it's just it's fun to see that.

**Bonni** [00:12:49] And I remember distinctly this last semester a student raised her hand and saying Oh I know what it was at the Apple Watch had come out. I have one on my wrist right now and it had come out. And we were talking about the keynote talk that they had given the second one that mentioned about the Apple Watch and she said well I'm just really surprised that they had that guy give the talk and that guy in this case was their vice president of marketing.

**Bonni** [00:13:14] And she said well I just thought they would have had the president of marketing give the top if it was that important. The roll out of the Apple Watch and I thought Oh wow.

**Bonni** [00:13:23] I just sort of assumed when we talked about organizational- these aer freshmen by the way it's introduction to business class and I thought I had this assumption that if I said CEO president vice president that you know

there's not a president of marketing or a president of operations the vice president's as high as you can go until you become- one of those things. And it reminded me when you're saying knowing when you know that one moment in time in my classroom sort of haunts me.

**Bonni** [00:13:47] But I think in a good way because I think how many times do I do that when I'm teaching where I think that they know. But because there's no time for exchange until a really high stakes thing like an exam I miss it. And that must happen to us all the time as teachers.

**Todd** [00:14:04] Well yeah and that's. That's the amazing thing people talk about some of the nuances like moving from a teaching centered focus to learning centered or student centered. And there are differences in there but that concept of going in and giving a lecture and thinking I gotta get through Chapter 6.

**Todd** [00:14:19] And if that's your focus I've got to get through Chapter 6 and I'm lecturing because there's a lot of content. I have no clue if my students are getting any of this. They could be sitting there daydreaming. They could be texting and they don't need their phones and laptops they could just be doodling and drawing pictures and thinking about hamburgers.

**Todd** [00:14:37] But if you put them into small groups and walk around the room and see what they're talking about then you know if they're getting it so much like your example you were given a fuse that get into small groups and think if you were in charge of this company who would you give this presentation on why some people might say well I would give I would have someone who works like putting them together give the presentation.

**Todd** [00:14:56] Because wouldn't it be cool if a person who is on a production line was the one talking about how great this watch was and somebody else could say well I would give the president of marketing that job because that should be the president of marketing.

**Todd** [00:15:08] And as you walk around you would not only hear concepts that are kind of cool but you'd get a sense of if they knew what they were talking about. So that's where we got to get students talking there's no other way to know if they know it. In fact there's no way for them to know if they know it unless they try to produce it.

**Bonni** [00:15:23] How is our brain like a phone, a smartphone. I think specifically.



**Todd** [00:15:28] Oh yes. Well it's much like that concept I pick up the phone. And it's funny because it's still to this very day I keep playing around with it. But primarily my phone I use it to call people and I text people and I do quick searches on the Internet. That's primarily how I use my phone but my phone has amazing capabilities.

**Todd** [00:15:48] It can do so many things I can do voice recordings on my phone and I could make the little movies on my phone. I can do I just tons of things on my phone. So the brain is kind of interesting because I make that analogy at times. If if the way you use your brain as essentially I use it to recall specific pieces of information.

**Todd** [00:16:06] And I live in just the standard way I always do the same type of thing it's kind of like using my basic functions on my phone all the time. But if you pause and actually start working at kind of working at different areas of your brain what can you really push yourself to do and what could you learn to do.

**Todd** [00:16:22] Then suddenly we change all the possibilities and a quick example is a person who says you know I can't draw. Well first of all if you can how some people can't draw which would mean they can't hold a pencil and it's legitimately a huge challenge for individuals. But if you can hold a pencil in your hand you can draw. The thing is you may draw very very poorly.

**Todd** [00:16:43] Well if you've never actually exercised the part of your brain that's responsible for hand eye coordination and drawing that would explain why you're a poor drawer it wouldn't be I am terrible at drawing because I can't draw. You're terrible at drawing because you've never tried to draw really worked at it. So working different parts of the brain. It's it's amazing what we could accomplish.

**Bonni** [00:17:05] To take your example too because one of the things I know you've written about as well is that if I also tell myself I can't draw then of course I can't draw but there are people who draw with their mouths because they're unable they don't have any hands or aren't able to use them or have learned how to draw and paint amazing works with their feet.

**Bonni** [00:17:22] But those were people who never let anyone tell them I can't draw or that they aren't able to do that. Never let things like that held them back. So what kind of effect does mindset have as it relates to metacognition. As I do those things overlap in those areas of research.

**Todd** [00:17:38] Yeah well you know in the grand scheme of it I suppose it all overlaps too. But yes this definitely comes in if the one thing we know for sure with tons of research out there is in terms of learning as if you have convinced yourself or you say I can't do this.

**Todd** [00:17:52] Learning is incredibly difficult. Could you imagine as you're reading a book here thinking as I'm reading this book I really think I don't understand this really a bit more. This is stupid little bit more. I don't get this real little bit more. I can't learn this. And then you take a quiz over it. I mean nobody would be surprised if you struggled with that.

**Todd** [00:18:09] So that concept of mindset is based on this idea of growth either I can work at something and getting better at it or people have a fixed mindset. Either you have a talent or you don't. And if folks say for instance quantitative reasoning is a talent you either have or you don't.

**Todd** [00:18:25] And I don't have it then they will utter phrases like I can't do math. They'll say things like I can't give presentations I can't write. I'm not a good writer I can't draw I can't I'm not good with people any of those phrases are a fixed mindset where a person says this is something that I don't have and what we really need to do is try to bump people over to a growth mindset where you simply say I may not be good at this but I can get better. I might not be great at it.

**Todd** [00:18:53] I may not ever be a professional but I can certainly get better. So I wonder what the next step would be just to get a little bit better.

**Bonni** [00:19:00] That's one of the things I coach my students on if they ever say I am not good at taking tests they say oh gosh let's give my little mini mindset and talk to them essay.

**Bonni** [00:19:10] So can we say I am working on becoming a better test taker and then right it does help I mean I've had students at the end of the semester come and say that really was a good shift in their minds to make it and help them if they were able to put some effort there.

**Todd** [00:19:25] Yes. And before we move off this topic to us I'll tell you another really really helpful one is to ask people what aspect so if they say I'm not good at taking tests you say what kind of tests.

**Todd** [00:19:34] Because it gets them away from this concept of thinking all tests are the same and then they say well actually I'm not good at multiple choice tests and I you know I'm terrible at essays but I'm not very good at multiple choice.

**Todd** [00:19:44] OK well what kind of test are you good at. Well you know I might be good at true false I might be true it whatever but the point is you're starting to shift it. So if someone says I can't give a presentation you say what kind of presentation.

**Todd** [00:19:55] And once you start talking about it you tease out exactly what you're doing. You tease out what aspect is really challenging and say Could we work at that then.

**Bonni** [00:20:04] One of the things you talked about in your TED talk was this idea that we could apply what we know about working out or lifting weights or that kind of thing to making our brains work better. What can you tell us about that.

**Todd** [00:20:17] It's kind of a funky thing but I always think this is fun I get the initial example of this came from my friend Terry Doyle who is a co-author on that book The New Science of Learning that he and I wrote. But it's that concept that he came up with years ago.

**Todd** [00:20:30] I love this is if you were going to go to the gym once every two week and lift weights for 10 hours you can ask the students what do you think here are your physiology would be like or what it would you feel like and the students all the same to say the same thing as well every two weeks you go to live for 10 hours you get really really sore or you would not build any muscles you wouldn't get any stronger and you'd hate it say OK well be kind of sad if that's how we studied wouldn't it.

**Todd** [00:20:56] And you could just pause and everyone says OK I kind of get it. If what you're going to do is study every two weeks for a blast of time and then not work at it for a couple of more weeks. It's kind of like building muscles. It's just not going to really develop any long term memories.

**Bonni** [00:21:12] How does listening to music impact our ability to learn.

**Todd** [00:21:16] Well that's a really really interesting point. Lots of research out there. The research basically and this is one that I kind to human ha just a little bit about and it's what I usually do I'll start to stutter and kind of see like I'll talk like

this when I think Oh somebody is going to get mad at me. So basically what the research basically shows is that study or music does not help you process information.

**Todd** [00:21:40] However there's a big ass trick out there if it's music that you're really not processing so basically you hear music but it's not processing in your brain and it's not a differentiation from vocal and not vocal music.

**Todd** [00:21:51] I'll go back to that in a second but if you're not processing it then your focus is on the content that you're trying to learn and it works really really well. If what the music's actually doing is blocking out background noise so you don't hear people in the next room talking. You don't hear sounds down the hall whatever that helps you but it's kind of like a white noise.

**Todd** [00:22:09] Now if it's music that you're processing either because it's vocals and you're kind of singing along with the vocals or non-vocal instrumental music and you're kind of humming along with it. Instrumental music is very very thought provoking at times.

**Todd** [00:22:22] Then is competing with the information you're trying to read. So if you can find some there's some good actually web based ones or some music that you can get through YouTube they will play almost an hour and a background almost random kinds of sounds and it's melodic but it's like white noise that can be extremely helpful.

**Todd** [00:22:42] But if you're sitting there listening to the popular songs on the radio every research that I have read says that that does not help learning.

**Bonni** [00:22:51] A few years ago at our university we took multiple intelligences test designed around Gardiner's multiple intelligence theory and I wound up you know very proud of receiving them 100 percent in one of my intelligences.

**Bonni** [00:23:05] The only problem was it was musical intelligence which doesn't do a whole lot of good if you teach business and management and have nothing to do with music in your life.

**Bonni** [00:23:14] But I learned that some of my other colleagues who received 100 percent on that too. This is not the only distinctive thing about someone who has musical intelligence but you might be more likely to constantly in your life have a sound track going.

**Bonni** [00:23:27] And I thought I thought that was just something that was just unique to me. I didn't really realize there were a lot of us running around in this world that constantly have a soundtrack.

**Bonni** [00:23:35] But you talked about in your TED talk that you can't just say classical is fine and you know with lyrics isn't because I mean if I listen to classical and that's not my number one type of music to listen to.

**Bonni** [00:23:47] But all of it is just it does start to go in my head and I start to hear the melodies and that can certainly distract me by the way I think. A side note one of the things I think is helpful to have in your toolkit as a professor is some kind of white noise for a number of reasons.

**Bonni** [00:24:03] If you travel at all white noise can be such a good thing to help get a hotel room to be a little more hospitable toward sleep but also in the classroom we have sometimes downstairs. It doesn't happen too often but someone to be playing drums in the basement of the building where I often teach and just being able to put on some white noise and plug that into the speaker system.

**Bonni** [00:24:23] The app that I use is called asleep literally the word asleep but there's a bunch of them out there and you can also just buy tracks on iTunes and put a track on repeat or something like that but I really think white noise is great.

**Bonni** [00:24:34] I haven't checked out the type of music that you're referring to but I'll definitely look that up after today. How does sleep or exercise affect our ability to learn.

**Todd** [00:24:44] Some of the stuff that's really interesting about the research these days can dig through a bunch of stuff is is something to don't seem to be really related to learning. I mean we talk about learning it's usually what you're thinking about learning and practicing things and reading books and studying and all those types of things but there's also some physiological component of the human brain that kind of put you in a good physiological sad I almost called it a mindset but it's a different thing.

**Todd** [00:25:11] It's that concept of physiologically you can you can incorporate new information you can learn new things and so some of the things that can impact that. For instance or sleep.

**Todd** [00:25:21] When you're tired this is one we all know when you're fatigued it's much harder to learn something that in is when you're rested and what most people don't realize again kind of that metacognitive awareness is people don't realize when they are tired so you might be reading a material and say I don't get it.

**Todd** [00:25:34] And the reason you don't get it is because you're actually tired which means your energy your brain is kind of going to brain functioning just survival kinds of things and you can't really cognitively process things at a higher processing level.

**Todd** [00:25:47] And there's all kinds of neurotransmitters and everything else that is too complicated for right now. But the concept of getting sleep helps replenish those things. And exercise also does. There's all kinds of good research out there that exercising actually facilitates the learning process.

**Todd** [00:26:02] And sleep does it. One of my favorite studies was an astronaut's study by the way are done by NASA with astronauts in which a group of astronauts were given a nap in the afternoon. Another group was not and they kept working through these cognitive tasks and the group that had the NAP had a 34 percent increase in cognitive functioning even hours after the nap over the group that didn't have the nap.

**Todd** [00:26:24] So that concept of taking a quick rest or exercising a new look at exercising versus not exercising in processing information and things like attention spans ability to focus all those things are just some huge benefits out there.

**Bonni** [00:26:38] You know you mentioned exercise and I'm curious if you have anything that you do before you teach or before you go do a TED talk or something like that that helps you get your mind your body your self ready to engage with an audience. Is there any sort of preparation that you go about doing.

**Todd** [00:26:57] Well that's one of the tricky when you have a little bit careful because of course the way their brains work it's extremely complex. So let's go this way.

**Todd** [00:27:04] First as sometimes if you're really really nervous you know you could do a couple of quick jumping jacks or you could run around the building or take a quick walk or something and it may very well relax you because you're

engaged in a repetitive motion or because you're getting out of the environment for a few seconds.

**Todd** [00:27:20] You know there's the old concept of you know take a quick walk outside and come back in and you feel less stressed since you know you think wow that walk really helped me. Well it helped you when you got outside and looked at trees and grass and people and you stop thinking about the thing that was making you so stressed.

**Todd** [00:27:35] So that can certainly help. The research basically doesn't demonstrate that if you do jumping jacks at the beginning of class that you're going to be able to process the information better because of neurotransmitters and the way it's working.

**Todd** [00:27:48] It's more of that may be used as a focal point to say OK hey everybody it's time to learn. You do the jumping jacks it may actually signal a learning time for you.

**Todd** [00:27:56] But physiologically that when again physiologically in the brain probably doesn't do a whole lot. But psychology psychologically it may be very helpful.

**Bonni** [00:28:07] Yeah I so appreciate your discussing the nuance and complexity of something like the brain and you make it so accessible even though it is so complex. I also think some of this is just a personal preference type of thing of what what works for you when you're when you're getting ready and what works for you may be a technique that works for someone else and others might think oh that doesn't work as well for me.

**Bonni** [00:28:29] I like to if I'm talking in front of a really large group I don't know if you've ever done this before I actually like to make sure I get some time to go stand in the space. That was something and they can explain why I can't do research on. My brain and why this worked.

**Bonni** [00:28:44] But that was something that really helped bring my nerves down was to go and stand in the same place where I'd been giving the talk and try to get a sense of just what it felt like to be there. Because otherwise if it's something that has a lot of lighting or cameras or something like that and you get up there.

**Bonni** [00:28:58] And then you're going to end up focusing on oh that lights really bright in my eyes and then I'm going to hold my hand up to try to block any and just end up having the focus get lost on that great first impression that you can make instead. So that's helpful to me.

**Todd** [00:29:11] Well know this is really good because basically what happens and we can draw this right back and back it academe very very quickly is you only have so much cognitive energy so you have a certain amount of energy that you can use to process information.

**Todd** [00:29:23] So uncertainty requires more information the known things. If you get into your car and start driving it way easier to pull out of a parking space and get into traffic driving from your car than it is a rental if you imagine what's the probability of getting an accident with a rental car versus your own car or rental would be way higher.

**Todd** [00:29:43] And the reason I'm in this example and there is now imagine you're stepping onto a stage that you are familiar with versus is unfamiliar and if you're totally unfamiliar with it then all that cognitive energy is going to get drawn into trying to figure things out very quickly instead of doing what you're supposed to be doing which is your presentation as soon as you step up on stage you look around and say OK that's where the clock is.

**Todd** [00:30:04] That's where the audience is. That's what the light feels like. All of those sensations will not bombard your brain and make you say whoa I got to process this right now. And as a result then you don't have to process that you have more time to process the thing you want to focus on.

**Bonni** [00:30:19] I hadn't ever thought of that before that's really helpful for me to frame it that way. I was thinking about a speaker I saw about four months ago who was phenomenal. I mean I thought she was so dynamic and had fantastic stories and captivating.

**Bonni** [00:30:33] It just took a little while for me and my brain to recover from her initial impression. She walked up to the front and it was oh I don't need a microphone do I. Yes you do. Actually we kind of place where she was speaking and then it was are you going to advance my slides.

**Bonni** [00:30:49] Do I just tell you to go. And I thought oh my god what had taken five minutes.



**Bonni** [00:30:53] I always err on the side of you need a microphone and if you're in a place where there's any question it's just going to make it so much easier for people to hear. I have many colleagues who are hard of hearing myself is a tad bit hard of hearing.

**Bonni** [00:31:05] Just go for it. If there's a microphone there use it and if there's any way where you can have a clicker where you can advance your own slides I think that's ideal. The best 20 dollar investment that any of us could make.

**Bonni** [00:31:16] In fact I'll put a link to my favorite one in the show notes unless you have one that you'd like to recommend to bet. I mean if someone's going to advance your slides that's it's just tough if that's your only choice then to try to have just a physical gesture instead of a bunch of next slide, next slide.

**Todd** [00:31:31] It draws away from the attention of what's happening but also you know real quickly I guess talking about faculty roles to imagine the same thing for a student then if a student walks into the test and sits down to take an exam and doesn't really know the first exam Well that's the best example doesn't know really how you're going to start the task is it right away.

**Todd** [00:31:54] Doesn't know for sure. Like what are you going to read instructions or are you going to stop people exactly at the end.

**Todd** [00:32:00] I mean they're sitting there trying to figure out what's this test going to be like and it's burning cognitive energy that could be spent by actually practicing.

**Todd** [00:32:07] You could have students come in and take a quiz and if you haven't take a quiz before an exam and then you say by the way when you take the exam in a few weeks it's going to start just like this it's just going to be longer.

**Todd** [00:32:17] All of those nuances of the same thing as looking at can lights or clickers or advancing slides the same type of thing that all goes away because you don't have to think about those other things. So take away the stuff that just doesn't necessarily need to draw cognitive energy.

**Bonni** [00:32:33] I'm going to be thinking about that a bunch.

**Bonni** [00:32:34] Thank you for putting that framework in my mind as we move over to the recommendations segment I just want to give you one minute to

wrap us up talking about this. What's the most important thing we can do to improve our thinking about learning.

**Todd** [00:32:49] The biggest thing for me still is any time you're surprised stop and think about why you were surprised at what just happened. So if you get lost instead of saying oh my gosh I'm lost I hate getting lost. How did I get lost. It may be that you got lost because you didn't have a good understanding of where you were going.

**Todd** [00:33:07] You didn't check whatever it is if you take a test and get enough minus minus instead of being frustrated by it and everything else and saying well I guess I better study harder. You stop and say OK this was not what I expected. What should I do differently next time.

**Todd** [00:33:21] If you lose your car at the airport how do I not lose my car at the airport next time if you're having a conversation with somebody and you forget a thought in the middle of a conversation you say gosh I hate it when that happens.

**Todd** [00:33:33] Instead of just getting frustrated by all these things you stop and say OK why might that have happened and how can I work toward it not happening in the future.

**Todd** [00:33:43] And so I guess that's it. Thinking about the process of thinking when it goes poorly and how you can fix it as opposed to just repeating it.

**Bonni** [00:33:51] This is the part in the show where we each get to make a recommendation and mine is a quick one just about the service called Dropbox.

**Bonni** [00:33:57] I know many of us in academia use it. And one of the downsides to using Dropbox as opposed to using Google Docs for example is the lack of real collaboration. I think they've made a good innovation lately to try to combat some of our perceptions about that with a new commenting feature.

**Bonni** [00:34:14] So if you go on the not on the folder that sits on your computer but on the website version of Dropbox.com and you log in and you go to one of your files you can invite people into the conversation around that document with their new commenting feature and you just use the at symbol and invite

them via e-mail or via their Dropbox user name and they can come on and make comments on the document.

**Bonni** [00:34:39] And it just adds a lot of collaboration that wasn't there in the past with dropbox and what is your recommendation for us today.

**Todd** [00:34:47] I'm going to cheat and do two.

**Bonni** [00:34:48] Oh please.

**Todd** [00:34:49] So the first one is f.lux. You can download on your computer your computers are basically set up so that its laptop is set up so that is bright all the time but as it gets late into evening and you open up your laptop in a really really bright light glows the whole room.

**Todd** [00:35:08] What this basically does is looks at the time of day and it decreases the brightness of your laptop automatically as it gets late into the evening. So it's kind of a cool thing. It also can be set up. I believe this is the one that shifts over away from the blue light because there's some great research that shows that if you look at such blue light especially in the evening it can shut down melatonin and release and it actually makes it hard to sleep.

**Todd** [00:35:31] And the other one is a little app called Forest and you can just grab this one is just called Forest. And essentially what it is is you set this thing up for an amount of time and it might be like for 40 minutes and you open the app and say for 40 minutes I'm going to study.

**Todd** [00:35:46] And if you look at anything on your phone it kills it starts to grow a tree as you do this and then a tree is fully grown at whatever time span you pick. And if you look at anything on your phone other than that little app it kills the tree.

**Todd** [00:36:00] And the concept there is that you actually once you get this app started that you focus on whatever it is you're doing studying reading or whatever and you don't keep looking at your phone because if you do you know you kill the trees and that's so sad.

**Bonni** [00:36:13] That would be so sad it reminds me of those little things that I can't remember the name of them but we were supposed to try to keep alive by feeding them. That was the opposite of that actually. Better I like the trees. I should note the name of that.

**Bonni** [00:36:26] Well before we end our podcast if people wanted to learn more about your work what would be a best way to sort of get in touch or keep in touch with your research on your books as you're coming out with them.

**Todd** [00:36:37] Yes so Twitter is just my name. So it's just Todd Zakrajsek as the Twitter account is just @ToddZakrajsek. And also by that is probably the easiest thing to do is just type my name in Todd Zakrajsek and go to the Web and type that in along with the words like apathy or teaching or faculty or keynote or anything else and those things will pop up but that'll that'll bring up so many things.

**Todd** [00:37:02] I mean these days I usually tell people if there's anything you need is you go to a good search engine and type in exactly what you need and so if you throw my name into a search engine it's going to pop up. The book I wrote with Terry Doyle has become extremely popular.

**Todd** [00:37:15] People really seemed to like that and that's The New Science of Learning: How to learn in harmony with your brain. And it's a stylist publishing book and I have another book coming out. I believe it's in September of 101 intentionally designed activities for the classroom with Claire Major and Michael Harris.

**Bonni** [00:37:31] Would you come back in September and talk about the book and become 101 intentionally design activities for the classroom.

**Todd** [00:37:39] See I think you're fabulous. I will come back any time you would like me to.

**Bonni** [00:37:42] Oh that would be great. Well good we can look forward to having you back on the show to talk about your book then that's coming out in September.

**Todd** [00:37:49] Excellent. I'd love to.

**Bonni** [00:37:50] Oh wonderful. Well thanks so much for being on the show and contributing to Teaching in Higher Ed.

**Todd** [00:37:55] Thank you for the opportunity. I really enjoyed it.

**Bonni** [00:37:58] It was so great having Todd on today's show and before I close I wanted to mention that if you have any interest in a professional development opportunity he runs four of the five Lilly Conferences and they're wonderful resources to help us develop our skills in teaching in higher ed.

**Bonni** [00:38:15] I'll put a link to the LillyConferences in the show notes and they are held all over the country. Feel free to check out the link to the Lilly conferences and see if you can incorporate that into your own professional development.

**Bonni** [00:38:27] And he'll be out here in 2016 February 18th through 21st. I'm excited about attending that one in the coming year. He has presented workshops and 43 out of the 50 states and would be available to come out and explore possibilities in your state.

**Bonni** [00:38:43] If you'd like to talk to Todd about that and he already shared how to contact him and I'll put that in the show notes. But it was so great to get to talk to him about metacognition and developing those skills in our students.

**Bonni** [00:39:01] This was the 47th episode of Teaching in Higher Ed. And if you'd like to contribute to the conversation. Please go to [teachinginhighered.com/47](http://teachinginhighered.com/47). And remember we're getting ready for the fiftieth episode if you'd like to leave a message with your ideas that you've taken away from listening.

**Bonni** [00:39:20] All these episodes are even if you're a new listener something you've taken away as well as a recommendation. Please call 949-38-LEARN and leave a voicemail or you could just email me an MP3 if you prefer to do those recordings on your own or even just got a quick email at [teachinginhighered.com/feedback](mailto:teachinginhighered.com/feedback). Thanks so much for listening and I look forward to celebrating number 50 with you soon.

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