

Bonni: [00:00:00] Today on episode number 203 of the Teaching in Higher Ed podcast Jan H. Jensen shares about his flipped classroom.

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Bonni: [00:00:21] Welcome to this episode of Teaching in Higher Ed. I'm Bonni Stachowiak and this is the space where we explore the art and science of being more effective at facilitating learning. We also share ways to improve our productivity approaches so we can have more peace in our lives and be even more present for our students.

Bonni: [00:00:48] Today I welcome to the show Jan H. Jensen. He obtained his Ph.D. in theoretical chemistry in 1995 from Iowa State University working with Mark Gordon where he continued as a postdoc until he joined the faculty at the University of Iowa in 1997.

Bonni: [00:01:09] In 2006 he moved to the University of Copenhagen where he is now professor of bio-computational chemistry. In addition to his research interests in quantum biochemistry, he's interested in blended learning (receiving the University of Copenhagen Teacher of the Year award in 2013), open access publishing and open science.

Bonni: [00:01:33] He is an active blogger (on Molecular Modelling Basics and Proteins and Wave Functions), active on Twitter and initiated the overlay journal Computational Chemistry Highlights and the aggregator Computational Chemistry Daily.

Bonni: [00:01:50] One of the things that you'll hear Jan share about in this episode is how he creates videos for his classes. And a way that you could do that easily is with the product from today's sponsor for episode 203. And that's screencast-o-matic. If you go to screencast-o-matic.com/highered50 That link will also be available in the show notes at teachinginhighered.com/203. You

can learn about their product which allows you to video whatever's on your screen including a PowerPoint as yenne will describe later in the episode.

Bonni: [00:02:27] And as we talk about you can record your face, you can record your slides or some combination of them. It's got easy editing tools and you can receive a 50 percent discount on an annual membership for the screencast-o-matic software/service and I hope that you will check them out. And thanks to them for sponsoring today's episode.

Bonni: [00:02:48] Jan welcome to Teaching in Higher Ed.

Jan: [00:02:51] Hello.

Bonni: [00:02:52] It is so nice to be connected with you. And I left the two resources that you sent over to me- Thank you for the time you took to write those. One is about your flipped classroom which is what we'll be talking about today. And then the second one this about active learning- and of course they interlink so well with each other.

Bonni: [00:03:12] You wrote, "I have taught chemistry courses since 1996 both in the U.S. and at the University of Copenhagen. I used the standard lecture model, always blackboard, never PowerPoint until about 2011 when I switched to peer instruction."

Bonni: [00:03:31] Talk to me about 2011. What happened to instigate this change and what did you find?

Jan: [00:03:39] So actually I had written a book based on some lecture notes. So it's a book about my field. I taught a course in something called computational chemistry and then I wrote the lecture notes up and the part of the book was really about how to use visualization in chemistry, so better teaching through visualization.

Jan: [00:04:01] And so I wanted to try to include that in my courses, to illustrate concepts. And then I really sort of realized that the way I was teaching, there wasn't room for any of that. Because in the traditional model I felt that I had to say everything in a lecture that they needed to know. And so I was always running over time and running behind and things like that and there just wasn't room for anything new.

Jan: [00:04:26] And so I was sort of- I think I must have googled "alternatives to lecture" or something like that. And one of the things I came across was Eric Mazur, one of his videos on YouTube. I can't remember it was something like "Confessions of a Converted Lecturer" I think. And that's what of gave me- that sounded very interesting and so that sort of got me started on that path.

Bonni: [00:04:54] Yesterday I had someone in our Facebook group respond to an active learning article that I posted- and it's a colleague of mine actually so I it's someone I know well. And he wrote very candidly about "you know I've tried this."

Bonni: [00:05:09] He teaches history and political science and he says "I've tried this" and he's teaching classes probably 50-55 students and really just talked about the difficulty that the students have with sharing candidly in a environment like that. And we went back and forth a little bit. I think one of the challenges people have is thinking "well I tried it and it didn't work."

Bonni: [00:05:35] So I went back to what seems better, or more comfortable. Could you speak a little bit to any experiences you had with that feeling of "I tried it, it didn't work" and just what that transition was like for you both in a longitudinal phase but also I imagine every class you teach there is a little bit of that that goes on.

Jan: [00:05:58] Yeah I mean I think what really got me, I decided to try it but I decided to try it just one single thing. So there was a topic in the course I was teaching. It wasn't the most exciting topic in the world, I didn't really have a good lecture. I mean I lectured about it but I felt myself it was boring. So I said, "I'll do an experiment" so I'll sign those pages from the book and then I'll ask to clicker questions and we'll see how that goes. If they get it right, then I sort of know that it worked, that I wouldn't have to lecture about it in the future.

Jan: [00:06:36] And so I tried that and it worked, both questions were answered with 90 percent correct. And then I just thought well you know there would would've been a waste of time lecturing on that. And so maybe there are other things I can replace. So I didn't flip the whole classroom at once. Right. I flipped here and there. And the first experiment was little success. I don't know what would have happened if it was a failure. If they hadn't read or things like that, but it just worked right away. So I got hooked on that.

Bonni: [00:07:07] It's interesting your definition of success, in this case, was students answering the questions correctly because I imagine as you have

learned more about how we learn there now are some, at least I know for myself, there are discoveries that I have encountered about actually sometimes the failure will generate more learning. There's a neuroscientist out of UCLA, the University of California Los Angeles, who I've had a chance to interview on the show before and he uses this phrase, "forgetting is a friend of learning."

Bonni: [00:07:47] And I'm laughing because right now I am I know his name, it's just sometimes when you have the pressure of being recorded you forget names that you totally know. It's going to come to me in a moment. As soon as I let the pressure off. But anyway, "forgetting is a friend of learning" he talks about his in their memory lab there that we have that tighter neural connections when we actually get the answer wrong. Of course as long as we then get the answer right and we're able to determine "how was I wrong?".

Bonni: [00:08:19] Could you speak a little bit about any value you see in failure on these questions or you know getting the answers incorrect, what have you discovered?

Jan: [00:08:28] Well actually so what I try to do now is ask questions where about half of them get it wrong, half of the students. And so that's sort of the perfect question. Every once in a while I'll try to throw in a harder question where most of them get it wrong but it's not that they get it wrong because I'm trying to uncover some misconceptions. You want the level of difficulty just right, where at least half of them are sort of on the edge of understanding it but not quite there and you want to help them take that extra step.

Bonni: [00:09:02] And speaking of "forgetting being a friend of learning," that was Robert Bjork. Robert Bjork, from UCLA. For my own sake and of course now you know I'll never forget his name again. So now that I have allowed myself that closure. Tell me more then because it seems like if I were to just hear this advice I would think, "50 percent? Why would that be the ideal percentage?"

Bonni: [00:09:29] You would think, at least I would think, "well I now know that this percentage of them got it wrong. I want to fix that. So then I'll just make the lecture better, the video better, the preparation before the class better, so that I can get to 100 percent." Share more about why 50 percent really works for learning to occur.

Jan: [00:09:52] Yeah because I used to peer instruction approach. So now they have to find a neighbor who voted something different and then they have to discuss why they voted the way they did and so and then we'll have a re-vote

and then usually 80-90 percent get it right. So if it's 50 percent in the first shot, then there is a pretty good chance that their neighbor will have the correct answer. And so that's why I sort of try to aim it there. So it's- you want to, I want to ask questions that are initially confusing and then explained by their peers.

Bonni: [00:10:31] So you're taking all of this history of all the times that you've taught this class or even just this particular concept previously and you're aiming toward a peer instruction model that the first poll question, or whatever type of intervention it is that you might use, that they don't all understand it at first. And there is that struggle of, "I got it wrong, I wonder why. I wonder what that was," and then I have a chance to talk to one or two people around me and I can hear what they came up with. But also the "why? Why was the answer?" because multiple choice questions are pretty bad at that by themselves, right, without the kind of facilitation that you're describing.

Jan: [00:11:17] Yes yes. The "why" has to sort of be uncovered in conversation, right. I mean yeah, it's usually a misconception or something you can uncover by asking the multiple choice question. And so I should add that when they get it wrong- I think the best kind of question is where there are at least two answers that look right, but only one is right. So it's not that they get it wrong because they had no idea, they actually thought they knew what was going on. Right. And now they are surprised to learn that there's something there that they've misunderstood.

Bonni: [00:11:52] On a past show, I was able to speak to the authors of a book about multiple choice questions and that's Jay Parkes and Dawn Zimmaro. And I teased them because I thought, I never would have thought that a book about multiple choice questions could be as interesting as their book was. I will candidly say I would not have read that book if they weren't coming on the show and I felt like I should respect the time they put into writing it.

Bonni: [00:12:19] But they spoke so eloquently about distractors, the answers that are not correct. And one of the things I really learned from it was that, they didn't say this but this is my interpretation of my learning is, I better spend almost as much time if not maybe even more time on those distractors and how do they facilitate the learning process. I'm not sure if you're able to, but could you think of an example where a type of question that you might ask that yes you have the one right answer but then how you think through a distracter in your discipline?

Jan: [00:12:57] Well actually the easiest is to say, "one of these statements is not correct." Right. Because then you write a bunch of true statements which is much easier. And then they are all distractors because one of them is incorrect. Right. But they're mostly reading true statements.

Bonni: [00:13:17] Yeah.

Jan: [00:13:17] I mean they're constantly distracted, I would say.

Bonni: [00:13:20] Yeah yeah.

Jan: [00:13:21] Also I often ask questions where they actually don't have all the information they need and so they actually have to realize this and ask me or make some assumption.

Bonni: [00:13:35] I'd love to hear more about that. Can you give me an example?

Jan: [00:13:38] Well yeah, okay I'm trying to think sort of without getting too technical but very often in what I teach, in the part of chemistry I teach, temperature is very important and so they really need to know what the temperature is but it's not given to them the problem. And so they really ought to realize that that's, not necessarily a problem, but then you have to assume some temperature. So there is an assumption and an underlying assumption in the answer.

Bonni: [00:14:07] I imagine that would get all kinds of depth for you for what they were thinking about, because so much of teaching for me is helping students undo the learning that some of our educational systems have shaped in them, that they think, "I must memorize these words."

Jan: [00:14:29] Yes.

Bonni: [00:14:30] "But these words don't mean anything to me and it's not going to really matter. I just could memorize the set of words and it doesn't matter." But the thing that you're talking about, because I either need to ask you what the temperature is but I also could make assumptions about the temperature in coming up with my answer.

Jan: [00:14:48] Right.

Bonni: [00:14:49] And yet those assumptions I used are informed by something and to me that's very intriguing to think about as a teacher, you're helping them to think deeper than just you know memorizing a definition or a formula.

Jan: [00:15:03] Yeah right. And another common trick is to include more information than they need. That will also make them very nervous because they're used to hearing these questions in the back of the book right. You have exactly the amount of information you need and you need to use it all in order to answer the question and if you haven't used some piece of information, you've missed part of the problem, right. Which is of course not how it is done in real life. You're bombarded the information and you have to find the most relevant information. But you can do that because you are together with them, right. I would hesitate to do that in an exam problem or something like where they're under stress or they can't ask. But it's okay to confuse them when we're together.

Bonni: [00:15:45] Yes. That makes a lot of sense. In my field, I do a case study when we're talking about different formations of businesses. And these are primarily for tax reasons or they're for liability reasons, but the case study that we're answering these multiple choice questions off will be, "oh this person has elderly parents and they need to make sure that they are around them to care for them and able to get to medical appointments." This has nothing to do with a corporation escort or LLC and yet it does confuse, but it confuses in a good way to think about sorting through which information is the most relevant and much more akin to the kinds of problems they would need to solve or decisions they would need to make in a different context.

Bonni: [00:16:32] Describe for me your flipped classroom. And then, in fact if you if you care to, share some of the principles around how you design a quercetin to maximise the opportunities and a flipped classroom.

Jan: [00:16:46] So my typical classroom is they have to watch video lectures that I make before we meet. So we typically meet twice a week for two hours each. So they have there some lectures that they have to watch. Then there is a quiz, an online quiz they have to take before we meet, so the night before.

Jan: [00:17:11] And then when we meet, then they first have an opportunity to ask me questions about the video. And when they run out of questions, then I have these multiple choice peer instruction questions they they can go through with with clickers, and when I say clickers I really mean you know like cell phones, so it's virtual clickers.

Bonni: [00:17:33] What is your goal for the quizzes that the students take before they come to the class, in terms of percentage correct etc?

Jan: [00:17:41] Okay so they can take the quiz as many times as they want, but they have to keep taking it until they get everything right. And it's basically there are two purposes. So one is sort of control for me. So they know that I'm checking whether they've taken the quiz. So our learning system has a function where you can send out an email to people who have not taken the quiz. So basically it's just to make sure that they come prepared.

Jan: [00:18:13] But also it helps them a little in sort of seeing "did I really understand the questions?" or "did I understand the subject of the video?" Because if they can't answer those quiz questions then they obviously couldn't and they really should go back and look at them again.

Bonni: [00:18:30] Is there any thing that you do to try to have these quizzes be less transactional than they sometimes can be? In the sense of there's a temptation and I think it's helpful for us all to recognize we would probably feel the same way of you know let me just game the system, let me let me take it the first time- I don't know if it gives feedback as to what the right answer was- or let me talk to my friend. And I actually, in my classes I'm like, "talk to your friend all you want," so that isn't cheating to me because I stress so much that these are here to serve you, they're for your learning. So please, talk to your friend, in fact your friend will have different questions served up to him or her because I use a bank, a banking model of the questions. So that 10 questions out of 100, your friend probably doesn't have the same questions you do anyway but I don't consider that cheating. Some do, I know, I realize other institutions, other professors do. But do you. Do you do anything to try to have it be less, "I've got to do this before tomorrow," and help them see how it helps their learning.

Jan: [00:19:37] Yes I don't assign any points to it, so I actually think that is key. So it is obligatory but there's are no points attached. And so as soon as there are no points attached, then you're sort of, well then the only reason to do it other than they know that I'm watching, right, is really their own sake. I should also mention that these quizzes are really easy. It's just really see if they've done their work or if they've seen the videos. So if they've seen the videos most of them get everything right right away. In fact, there's a lot of true/false questions and things like. So I really don't get the feeling that any of them just click randomly.

Bonni: [00:20:29] Tell me more about these videos and I know you put a great deal of thought and work in how you design them.

Jan: [00:20:35] Yes actually so I should say, so the videos are sort of typical MOOC videos so they're usually up to 7 subjects, each video has a subject and each video is at most 10 minutes long. That sort of goes back to your other question about the course design. The reason I actually use videos is really just because I don't like the way the text books are together.

Jan: [00:21:03] So I basically design- this is now after many years I didn't start doing this- but after some years when I got the opportunity and time to redesign the courses, I really sort of start with the questions I want them to be able to answer. And then I sort of set out, so I actually I write the homework questions first and then I sort of work my way backwards to well you know, "So if these are the homework questions they have to solve then what would my peer instruction questions be? If my peer instruction and homework questions are like this, what should the teaching material be like?".

Jan: [00:21:43] And so if you do it that way, at least in my experience, all the textbooks I've seen are pretty useless. They have things in what I would call the wrong order. They emphasize different things. There's too much. And so I really use the videos just as a quick way of generating teaching material.

Jan: [00:22:04] I think if I had more time I could equally well write my own textbook and use that. I don't think there's anything magical about the videos but if you really have to generate your own teaching material in order to fit the way you want to teach the course, then videos are just the fastest way of doing that.

Bonni: [00:22:23] One thing that's really surprised me, well one of many things that really surprised me about what people search for on my Teaching in Higher Ed website, one you already mentioned and that's it's a topic from 2013 or 2014, it's from a very long time ago about how to teach boring topics it's interesting to me that people really want to do that better. I mean I don't promote that post at all. I might now that I know it's valuable to people or at least search for it.

Bonni: [00:22:53] And then another one is I'm surprised by how difficult it is for people to make videos of themselves because I would suppose that, and I was wrong, but I would suppose that I'm up in front of people so often in a classroom environment you know that that does not translate to comfort at being recorded. Could you talk about how to make it easier both in terms of just the

nerves that we feel and the time it will take to edit ourselves if we allow that nervousness to take over? But also just technically speaking, how do we save time with editing the videos and that type of thing? I know you've learned a few tricks of the trade.

Jan: [00:23:34] Well I mean, first of all I should say my videos just as a screen recording you know of all the PowerPoint slides, so I'm not appearing in the videos. And I do that mainly because it makes the editing a nightmare. My continuity is a lot easier if it's just slides.

Bonni: [00:23:53] I will say, by the way, I don't have the study in front of me but I have seen some research that would indicate that it doesn't matter. That this doesn't detract from learning to see the instructors face is no different in terms of comprehension. So if it makes the editing easier and it doesn't matter for the learning, then why not. So slides are easier.

Jan: [00:24:13] Right and I can see it in a MOOC where it's totally online right then it's just a disembodied voice. I can see that. But with blended learning where you're meeting them several times a week anyway, I don't think it matters at all.

Bonni: [00:24:26] Yeah.

Jan: [00:24:27] So the only other... Well the main other I had to learn basically it was that once you record, I'd listen to it again, you just want to erase it and start over. So my best advice is just to listen to it the next day and the next day it just sounds a lot better or something. So I think it's just you come in with a lot of expectations about what you want to say. And a lot of them don't get fulfilled. You miss things or things like that. But if you listen to it the day after it's really not that bad, it's certainly not worth rerecording again. So that was sort of the one thing I had to learn.

Bonni: [00:25:04] It's intriguing to me how much students want our authenticity in these tools as well. I was recording something called a pencast, which I know you reference in your materials as well. So I'm drawing while I'm recording my voice. And back then I used to do it actually on a piece of paper with something called a smart pen. Although today's tablets and today's devices the stylus tools are so much better than they used to be that I've now gone completely digital. But back then it was you know writing and recording.

Bonni: [00:25:37] And I sneezed in the middle of one of my recordings. But again today if I did that, I may want, I mean knowing what I know now I wouldn't fix it, but if I hadn't learned that it'd be so easy to edit, why not take out the sneeze. But back then with the tools that I had I thought oh I'm not recording this again. I'm not going to do it. And they loved it. The next day I saw them and they said, "Oh I laughed so hard when you sneezed." You know we can be human and disarm them a little bit. And especially teaching subjects like you do that are difficult cognitively, why not help with some of these just ways to lessen the stress a little bit.

Jan: [00:26:21] Yes. I couldn't agree more. And the other thing you have to remember is that these people watch you know thousands of hours of youtube with people doing much worse things. I mean those they're so used to it.

Jan: [00:26:35] And I think finally the thing is just one thing you have to get used to a little bit is just how your own voice sounds and how you speak. But you just have to remember that this is, you're not speaking in a special way on video it is how you always sound, so this is what people expect.

Bonni: [00:26:50] Yeah.

Jan: [00:26:50] So you just have to sort of remove that the ego a little bit.

Bonni: [00:26:55] And it is interesting to think about that if you aren't used to hearing yourself or seeing yourself then it does sound very strange.

Jan: [00:27:05] Yes.

Bonni: [00:27:06] But you're so right. That is how other people hear you and that is not other people see you. And for podcasting as long as I have, the voice that I hear is now it's not so strange to me because I listen a lot I try to always get better at what I'm doing. So I do listen back to old episodes. And yeah it is something that you can become accustomed to in my experience.

Jan: [00:27:31] Absolutely. It doesn't really take that long then you're used to it.

Bonni: [00:27:33] Another big obstacle that people experience is that this really can seem so overwhelming. I mean I talked about not wanting to erase a sneeze because of the time it would take me, if we extend that to how long it takes us to do this with a course. It's overwhelming. You have wonderful advice for us to move toward a flipped classroom model without it just seeming

overwhelming. Could you talk a little bit about how you did it and what you recommend to us?

Jan: [00:28:04] Yes. So I guess I would say if you're starting a course from scratch then I don't really think it's that much more work to flip it. So I mean recording the video in and of itself doesn't really take that long, it takes a long time to make the PowerPoint slides. But you probably have to do that anyway if you are starting a new course or you have to make your lecture notes.

Jan: [00:28:25] So if you're taking over a new course and you know you want to use your own teaching material, then flipping it is really not that much extra work. Of course if you already have a traditional course and you want to flip it then that's basically like starting a new course again. And so then definitely taking it in pieces, in small pieces is the best way. So you can do that either by let's say introducing a clicker question once a week. So assigning a little bit of the textbook that they have to read themselves and they'll get a clicker question and then you lecture about the rest.

Jan: [00:29:02] Or you can take a week and say okay this week we're flipping completely right here. I won't lecture then you have generated some questions for that week. Next year you can do two weeks or something like that and just slowly flipping it. And I think that's worked fine and that's how I did it or for one of my courses.

Bonni: [00:29:23] Some researchers about teaching and learning coined the phrase "times for telling" and I'll put a link in the show notes to the Journal article where they shared that and it was from a reference in an episode with Derek Bruff who I thank for introducing me to that. So "times for telling" would be where you even talk about a boring subject, well what what can you put up front of that topic that helps make it more relevant.

Bonni: [00:29:57] And I think of a recent episode about active learning where the professor taught environmental science and I imagine some aspects of environmental science might be really boring, I apologize to my colleague, but he always puts up front of every class what news stories relate to today's topic and in that particular one he shared about Disneyland. This was more than a year ago, but Disneyland had an outbreak of Legionnaires disease. And so he was talking not about the marketing side, I think about the marketing aspect of that for Disneyland, but he's thinking about the science of the vapor and I'm sure temperature was involved in this as well.

Bonni: [00:30:38] So, "times for telling" could be another way to make flipping your classroom seem a little bit smaller and a "times for telling" could happen before they're in the classroom. Or it could even happen maybe in the last five minutes of the class where I do show a short video or we talk about a news story that then will propel them in to that chapter reading that might be a little bit dense or a video that might be a little bit dense and the quizzes. But they have that to frame it. I don't know if that rings any bells for you in terms of "times for telling."

Jan: [00:31:13] Well actually, the thing that rings the largest bell is the boring stuff. All right. Because that is actually why I redid my course and actually ended up making video lectures because you ask yourself, "why is the boring stuff there and why is it boring?" And so usually the boring stuff, you're teaching the boring stuff because it's in the textbook and that's the only reason you're teaching it, right.

Jan: [00:31:38] So it is sort of the common approach, right, where I have X weeks in the course, I have Y chapters in the book. And then you sort of do the division. I had a terrible time writing good questions about it. But that really begs the question, "why is it there? If I can't ask a good question, a meaningful question about the topic, then why do they have to know it?"

Jan: [00:32:02] I think it says something right there about the topic itself. And so I actually I didn't get rid of the hard stuff but got rid of the boring stuff. But the boring stuff really just turns out to be things that are not really relevant to what they have to learn. So it's there for some reason. But the only reason you're telling it is because the author put it in there. Right. And so the author put it in there maybe because that was in another textbook that he or she used when they were writing the textbooks. But maybe there was no better reason than that.

Jan: [00:32:39] So actually I think the boring stuff, that's that's kind of a warning sign that the curriculum needs to be addressed. And I think you can you can put a bandaid on it. I know I put bandaids on it before I completely flipped, right. But it is a bandaid. You have to be aware of that. And no amount of teaching evaluation is gonna heal the wound. If you want to keep going with the analogy right, the wound is always going to be there until you address it.

Bonni: [00:33:06] Before we move on to the recommendations segment of the show would you share about "just in time" instead of "just in case."

Jan: [00:33:15] Oh yes because that's actually goes right through to what I was talking about with the boring stuff. So a lot of boring stuff is the just in case. The only reason I'm telling you this is because you need to use it later and that later will be super interesting. But right now just cling to the fact that just trust me that it will be super fun in a couple of weeks. Right now it's boring because you need to know this in order to answer that.

Jan: [00:33:43] Well just in time you start with the exciting stuff, this is important. This is super important. Now, can you answer this? If you can't answer this, why? Well that's because we need to know something. So you just you motivate it immediately and so that basically allows you to see what is actually boring, meaning it's irrelevant to the question that you want to answer, that's important or the fun question that you want to talk about. Or maybe it's not so boring if you really see what the context is.

Jan: [00:34:19] I mean that was really I think this approach was really pioneered in medical schools with case studies. Right. So instead of memorizing the names of all the bones in the body, they say, "well here's a patient, here are the symptoms, what's wrong with this person?" Right. I think if the bone is broken you probably have to learn the name sooner or later of that bone right. But now it's the same information but it's put in context because you have to use that just in time.

Bonni: [00:34:49] My first job out of college was teaching computer classes and this was many moons ago when we were just coming out of word star. I didn't ever teach word star but a very old model of teaching where the students would be in a classroom for eight hours and I actually at one time taught six different levels of Microsoft Excel eight hour classes. So I knew every menu item that excel had at the time individuals only use 2 percent of what these tools were capable of doing and I imagine today who knows what's happened since then because they could do so much.

Bonni: [00:35:26] But one of the things I early on learned about teaching was anytime time I said, "well we'll talk about that later," I tried to never say those words I still do now. I try to never say those words because if I have to say those words then that means my sequencing is off right. Now I'm not saying I never do say that, but every time I do I cringe a little because I think that that means your sequencing is off. I should get to it just in time.

Bonni: [00:35:54] And the other thing that I hear you talking about is you've enveloped my attention in solving puzzles. There's a mystery, there's a question,

there's a problem to be explored. And then I become interested in what I need to do that. And then I'm open to hearing more about the information you're going to present. And if it is really more of a thing of, "years from now this will help you," well years from now I'm not going to remember it any soot that we truly can take it out of the textbook or out of the exercise or the video, yes.

Jan: [00:36:32] And we actually have, I mean many curricula build up where it's literally you have to take this course because you have to use it next year. I mean and that's the only reason you're learning the stuff now is because next year you're using. It's completely useless. You've completely forgotten.

Bonni: [00:36:50] Yeah our minds don't work that way.

Jan: [00:36:52] I mean it's like saying, "I'm going to Brazil in two years I'm Wallaga in Portuguese for the next six months," I mean it makes it makes no sense.

Bonni: [00:37:02] Absolutely. This is the time in the show where we each get to share our recommendations. And I have been actually working on the Teaching in Higher Ed website recently got a redesign and so I am going back into all the recommendations that people have made on the first 200 episodes of the show and there's now a page that people can go to to click on to get their recommendations and explore what books have been recommended previously, what ideas people have shared, or other people that they've recommended that we look to to help us be better in our teaching or even just poets and interesting reads.

Bonni: [00:37:38] So I wanted to recommend some utilities. I was going through my iPhone, sometimes I do that when I'm trying to think of a recommendation and there's a few that I've had some delights with. The first is "what the font," what the font allows you to use the camera on your phone through this app to tell what a particular font is and in the Teaching in Higher Ed website redesign, I will say I'm very fond of the new fonts that are up there so if you wanted to know what they were you could use this app and point to and find out what the font was that I decided on, I should say that my designer recommended for the web site.

Bonni: [00:38:15] And then there are two that I just haven't had a chance to see which one I like better but they are just amazing to me. They both are digital or I don't even know how to describe it, tape measures. So I take my phone with this app, one is called "Air Measure" and the other one is called "Tap Measure" and we have thought about, we have a little retreat in our master bedroom and

we've thought about making a second podcasting studio. Because believe it or not my husband and I often will have conflicts when we're trying to podcast in the same place and we thought maybe we would do the equipment.

Bonni: [00:38:48] So I wanted to know how we might go about doing that in that room and I can just hold my phone up and tap in the corner of the room and then tap in the corner and then tap in the corner and so on and have a floor plan of the room. And I have not tested it for its precise accuracy yet, so I can't speak to that but I'm just marveling at the fact that this is even possible with our phones. I mean you can measure something without a measuring tape but I mean it looks pretty accurate to me. But again I have not literally gone with the tape measure and seen if it was 100 percent accurate but those are fun to play with a little bit and I'll have links to the notes and also on the new recommendations page. And Jan, let me pass it over to you to share what you would like to recommend.

Jan: [00:39:32] Well actually so it's a book called make it stick: The Science of Successful Learning. It's written by three people and one of them has done a lot of actual research in learning so cognitive studies and things like that. And in the past I've tried to read those too but they've been awfully dry and full of jargon and I can't really make any sense of it.

Jan: [00:39:57] But this person teamed up with a storyteller. So basically someone who sort of made up stories or scenarios that illustrated some of these things that cognitive science has found out about effective teaching. So it's presented in a really sort of in a really useful way. So it's a book that I've bought many copies of and given to my colleagues here in the department who I thought would actually take the time to read it so I can really recommend it.

Jan: [00:40:26] It's very very practical but I think it really showcases some of the most important findings in cognitive science that has been applied to teaching. And it's really a shame that we don't take advantage of these research results so I'm in a research institution, always read the latest papers and you always try to incorporate those into your research. We really should do the same with our teaching.

Jan: [00:40:49] But I do understand that it's hard for a person, it's hard for me to pick up a journal article in cognitive neuroscience or something like that and then apply it to my teaching but I think these authors, this author team has done an admirable job of sort of condensing and translating it.

Bonni: [00:41:09] The other thing that I like about how they've approached the book, and just how you approach your sharing about your teaching methods, is that this applies to all of us. It's not like we're teaching you know these underneath that are so different that us that we have to do that in a condescending way, this is how people learn. And so we can learn about ourselves too and how we learn and just continue to facilitate our own lifelong learning. I like that part as well because I mean it's it's centred around the subtitle is The Science of Successful Learning and we all can benefit from that to become better teachers and also to become better learners.

Jan: [00:41:48] Absoutley.

Bonni: [00:41:48] I am so pleased to have been connected with you and thank you so much for coming on the show today and also for all the resources that people will be able to go to in the show notes which will be at teachinginhighered.com/203 to explorer even more. How to be successful at facilitating learning in their classes. I really appreciated meeting you and getting to learn from you.

Jan: [00:42:12] Thank you very much. It's been a pleasure.

Bonni: [00:42:19] It's been great talking to Jan H. Jensen about the way he flips his classroom. Thank you so much for your time and for your expertise on today's episode. And thanks to all of you for listening.

Bonni: [00:42:33] If this is your first time listening to the show or maybe you've been listening for a while but have yet to subscribe to the weekly update, you can receive the show notes with the links to all the things that we've talked about in your inbox along with an article about productivity or teaching that I write. You can subscribe at teachinginhighered.com there's a subscribe box right on the home page or if you want to skip straight to subscribe you can go to teachinginhighered.com/subscribe. Thanks so much for listening and I'll see you next time.

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