

Speaker 1:

Welcome to Optimal Neuro/spine Podcast, a podcast about optimizing our brain and spine in health and disease. Each episode, leading neuroscientists, neurosurgeons, educators, patients, spine care and quality improvement experts discuss their research experience, emerging science, surgical advances and insights about how to optimize neurological and spine care. Now here's your host, Dr. Max Boakye.

Dr. Max Boakye:

Welcome to the Optimal Neuro/spine Podcast. My guest today is Dr. Staci Saner. Dr. Saner is Director of the University of Louisville Health Science Center, office of Faculty Development. She is also program director of the Health Professions Education at a College of Education and Human Development and an assistant professors in the School of Medicine at The University of Louisville. Dr. Saner, welcome.

Dr. Staci Saner:

Thank you. Thank you so much.

Dr. Max Boakye:

Let's start by telling us what you do. What's your background and what do you focus on?

Dr. Staci Saner:

Absolutely. So as the director of the office of faculty development, I spend my time helping faculty to be the best educators that they can be. So I really want faculty to understand how teaching and learning works and I want them to be able to make a good, big impact on their learners. I have a doctoral degree in health professions education and I really love learning about learning science. And so that's where I spend a lot of my time.

Dr. Max Boakye:

I would like to first begin, this program we are very interested in optimization of neurological and spinal care. So I would love to discuss with you how we can educate our learners in relation to ultimately improving, making them self-directed learners in quality improvement and improving care and health of patients. But before I go there, can we talk briefly about the basics of learning? What is learning?

Dr. Staci Saner:

Well, when I think about learning and when faculty engage with a learner, your goal is to actually change behavior. So you work with a student or resident or fellow or colleague, you can introduce new knowledge or skills and that the ultimate goal is for them to change their behavior, take that new knowledge or skill and do something different than what they were doing before. And so to learn is to be able to actually take new knowledge and do something with it.

Dr. Max Boakye:

Great. So in this case, in quality improvement, it will be to change their behavior in terms of improving quality.

Dr. Staci Saner:

Absolutely.

Dr. Max Boakye:

What are some of the theories about how we learn and in particular, is there differences between adults and kid learning?

Dr. Staci Saner:

Oh, absolutely. And so what you are talking about is what we talk about as pedagogy, which when we talk about pedagogy or thinking about teacher directed learning and so that's our K-12 world, that's a lot of what undergraduate school is about versus andragogy. And andragogy is the teaching of adults. And technically that is where it is learner directed. So the learner is taking the new knowledge and or the learner is developing the skills to gain new knowledge.

Dr. Max Boakye:

I see. So in the case of resonant training and the hospitals, we're basically mostly dealing with adult learning?

Dr. Staci Saner:

You certainly are. And so one of the things to get your residents or fellows excited and to gain new knowledge is to provide them that opportunity to make some decisions on their own, kind of motivates them to learn something new because they can take that knowledge and do something with it relatively quickly.

Dr. Max Boakye:

So obviously a topic of learning is huge, but can you summarize briefly some of what we know about in neuro biological basis of learning?

Dr. Staci Saner:

So whenever you learn something or gained some new knowledge or skill for that matter, you are kind of changing those pathways. You are myelinating those neurons. And the one thing I like to talk about is like the difference, the difference between a novice learner and an expert. And so with a novice learner, they are gathering new knowledge and it's kind of discrepant in their brain, where as you an expert in your field, when you gain new knowledge, you've already developed a framework. And so when you get in some new piece of content that is already connected to something else that you've had experiences about, before our novice learners, your residents, medical students, they get this new knowledge and they don't have any place to connect it. And so it's much more difficult for them to gather that new information, put it in a framework. So that's why it's more difficult for them. And it takes time. It takes the experiences that you have had over the years in order to put them in the right place and to be able to utilize that knowledge.

Dr. Max Boakye:

What are some other things that we can do to facilitate them acquiring and going from the novice to experts in learning quality improvement? I know that there've been a number of techniques such as retrieval practice interleaving space, can you kind of summarize some of these techniques that might be applicable here?

Dr. Staci Saner:

Oh, they're all applicable here. Let's start with retrieval practice. So you are learning new information. That information will then go to your long-term memory, but you've got to be able to go and retrieve that content out of your brain, bring it to your working memory and then actually analyze or evaluate or do something with it. And so it takes practice to actually go retrieve it from your long-term, bring it into your working memory, do something with it. So that is a difficult process for people to do. So we could talk about spacing out that retrieval practice, where you can try to do something this week and then maybe do it again, six, seven days later and then maybe stretch it out 14 days later and then go back and keep increasing the distance and time for you to do those retrieval practices, if that makes sense.

Dr. Max Boakye:

So in the area of quality improvement, if I'm trying to teach quality improvement, it would be worth asking retrieval of different concepts and different techniques or and then spacing it out over time.

Dr. Staci Saner:

Yes. Absolutely because you would want them to retrieve that content, utilize that content. And then a little bit later, see, are they still able to retrieve that content? I would bring up in the HPE world in Health Professions Education as a whole, there's just not a lot of research out there around these different practices. There's a lot of that research in K-12, there's a lot of research in undergraduate education, but we are only assuming that some of these processes still work for your residents, fellows and so forth. But I will mention a colleague of ours who's in the dental school, just published a paper about active engagement and spaced retrieval in dental education. And he came up with some fascinating data to support that this is working for adults. This really works. We really want people to utilize active engagement strategies and spaced retrieval and just do it. It's good for them.

Dr. Max Boakye:

That's great. So I will get that reference from you and I'll put it on the podcast website. It's actually interesting that when I learned about, when I kind of try to remember what I learned about quality improvement, it was just maybe a couple of two of didactic lectures. There wasn't any retrieval practice or anything like that. So suddenly this is a new area that's I think most, if you trained in the previous decade, you probably just got a few didactic lectures and it's important that these newer learning techniques be applied as we teach these concepts.

Dr. Staci Saner:

I can't agree more. You've really got to be able to use active learning strategies to really hone in those skills and get the learner to take that information in.

Dr. Max Boakye:

So how long have you been teaching Health Professions Education and how long have you been in this field?

Dr. Staci Saner:

Oh, well, I actually came to the University of Louisville in 2016 and I immediately, January of 2017 started in the HPE health professions education graduate certificate program out of the college of education. And from there I revamped the entire curriculum and then became program director shortly thereafter. So it really hasn't been great long period of time that I've been in this field. But before I was

in higher education, I spent most of my career in the K-12 world where I was an educator of science teachers. So I taught science teachers how to teach. And so moving on to the health professions, I think of you guys as just more science teachers. And so I'm trying to... I utilize the same concepts, the same information. It's really not a whole lot different.

Dr. Max Boakye:

Interesting. What got you interested in this area?

Dr. Staci Saner:

Well, I think my biggest interest was once I came to Louisville and started working with the faculty, I saw there was a huge void and of knowledge, knowledge around learning science, knowledge about best practices and research based practices to help learners gain knowledge in an effective, efficient manner. And so it really became exciting to be able to interact with faculty and help them see that there are better ways of doing things than the way you have always been doing it. And the way I kind of compare it is you and your practice, if you are still doing the same practices that they did 20 years ago in your field, I think you would be considered a physician who was kind of out of date. And that's kind of how I see when I came to the health science center. I thought as educators, a lot of the faculty here were kind of out of date.

Dr. Max Boakye:

Let's shift the topic a little bit and talk about self-directed learning. Why is that so important? And what does that self-directed learning fall within the theory of learning?

Dr. Staci Saner:

If you remember a few minutes ago, I talked about andragogy and so andragogy is really that learner directed type of education. And so self directed learning really falls under an andragological process. And another theory really kind of supports and that's what we call constructivism. And constructivism is the idea of the learner constructing their knowledge. They're taking the information and making sense with it in their own brain. You can help the learner. You may provide them a framework to be able to think about something, but they have to take that knowledge and put it into the framework that makes sense for them. And so that's how I see self-directed learning, but I think it may be even more important to define it. So what is self-directed learning? And so when I think about that, we are looking at the learner, they have to do several things.

Dr. Staci Saner:

So the learner has to define a goal, which I know a lot of you guys are doing that with your residents. What do you want to learn? What do you want to get out of it? But the learner has to define that goal for themselves. Then the learner really needs to determine what are the steps I need to take as the learner to achieve that goal. Then the next step would be the learner has to actually choose what strategies, what learning strategies, what techniques are going to help them achieve the goal to actually take those steps. And then finally, and maybe one of the most important components is seek feedback and they need to seek feedback from their faculty, from their colleagues.

Dr. Staci Saner:

And we need to help learners kind of develop this feedback seeking behavior. Because a lot of times I know residents can feel a little apprehensive about getting feedback. Maybe they're trying a new technique or skill, they're getting questioned and they don't want to look like they have the wrong answer, but if they can then go to you and say, Hey, how did that go? What do you think? How does this process work for you? We're starting to develop a feedback seeking behavior and that culture around the entire health science campus.

Dr. Max Boakye:

What is the frequency of success in terms of the creation of self-directed learners? So in other words, if I want to create more self directed learners who can improve quality and care, what are the chances that I would succeed and what do I do to enhance the likelihood of success?

Dr. Staci Saner:

Well, the first thing I like to tell faculty in general is remember where everybody has come from. So I try to remind everybody that our learners for most of their lives have been in a teacher driven environment. The teacher tells them what to learn. The teacher tells them how to learn. And as they have gone through undergraduate education and even through a grand majority of their UME or Undergraduate Medical Education, it's been teacher directed. And it really wasn't until they started into post-graduate training that things had to shift into a self-directed learning mode. And that is hard and nobody taught them how to be a self-directed learner. And so what I try to reinforce with everyone is we have to help our learners make that shift. And there are several strategies that you can employ to help your learners become self-directed.

Dr. Staci Saner:

And so I'll briefly walk through them. So the first one I tell people about is to actually talk about it, talk to your learners, tell them that I'm a lifelong learner. I have to keep learning and also admit when you don't know an answer, it's okay to not know something. And so you need to share with your learner that, Hey, I don't know the answer to this. This is how I'm going to go fill my knowledge gap around this particular topic and actually talk about it, admit it, the other thing that learner or that faculty can do is to incorporate more learner centered instruction. And people are like, well, what do you mean by that? Well, determine their knowledge gaps and help them fill their holes, like providing resources or different ways that they can go learn that knowledge, encourage the learner to actually reflect, do some reflection activities about what they know and how they came to know that knowledge, asking really good questions are what I call strategic questions.

Dr. Staci Saner:

If you can ask strategic questions, the learner then can start seeing what they know and what they don't know. And then be a collaborator with the learner. Don't be a faculty high on a pedestal, but actually work with them side by side. One of the other things that's really nice to do for the learner is tell them about effective and research-based study techniques because still they don't know this information. So we talked about some active retrieval spaced retrieval and then there's something called elaboration, which we didn't mention a moment ago. And so for elaboration, it can be very simple. It can be you asking the learner, what does this remind you of? Or what do you already know about this topic? Because real learning takes place when they can take those discrepant pieces of knowledge and connect it to something that they already know.

Dr. Max Boakye:

That's really great. This is wonderful. You mentioned the word constructivism. Do you want to explain briefly the two or three different schools of how we learn the behavior method? Just for people that are interested. Of course, people can do your program, which is a certificate in Health Professions Education to learn more about this field and gain more skills, but briefly, if you just want to explain the different theories of learning.

Dr. Staci Saner:

Oh, absolutely. So we can talk about, I did mention constructivism. And so that is where the learner is constructing that knowledge. And most of the time that is through them getting excited and seeing new information and bringing that in and helping them develop as an expert. The one you brought up a moment ago is behaviorism. And when I think about behaviorism, I think of, who was that, Skinner? Or, gosh, I forgot his name. Oh, Pavlov. Pavlov's dogs. So they ring the bell, the dog salivates and gets food. And so I don't really like behaviorism because I don't really like to think of humans as like we're trying to train them, but it really is a learning situation, a learning theory that they use a lot and like elementary school. You see what they line up and put their hands behind their back, or you're having the learner actually do some behaviors to get to the next phase or the next step.

Dr. Staci Saner:

Another one that we can talk about is social cognitivism. And so the great thing about that one is it really relies on social interactions. And so what is good about that is you guys are interacting with your learners in a social environment. It's important for them to interact with their colleagues, to interact with the faculty, to interact with their patients. And so they learn from that social interaction by doing all those things that you have them do on a regular basis. So that's just a very brief summary, but obviously you can learn more about those in our HPE program. And we have a master's degree that will be starting up very shortly as well.

Dr. Max Boakye:

Excellent. And I'll put a link on the website for audience that are interested in further delving into more of a deeper dive. I want to talk to you about simulation learning. How is it done? Why is it done? Do you think it could be helpful in teaching quality improvement and self directed learners in quality improvement?

Dr. Staci Saner:

Simulation is an active learning strategy. So when you talk about active learning, simulation jumps to the top of the list, because simulation is really the learner getting their hands dirty in a simulated experience. And so it's providing them an experience that they can then reflect on, an experience that they can practice at. And the simulation is a safe place to fail. So we don't want them failing with their patients. We want them failing in this simulated experience. So hopefully when they move on to do other things that they will be successful. So I can't praise simulation enough because it is really a great way. If you can structure it to help the learner can get the most benefit out of it. And so when you're thinking about like your QI Projects, I could see you guys actually utilizing true issues, true issues in the hospital, but then have them go through some type of thinking simulation, thinking about how would we deal with this particular issue.

Dr. Max Boakye:

That's great. That's great. I really liked that reflection. You mentioned reflection when you were talking about a self-directed learning. So what is known about reflective practice? What does this importance in learning and how do you do it well?

Dr. Staci Saner:

There are basically three ways that humans can acquire knowledge. We have observational skills, we observe what's going on in nature. There's reflection. And that is reflecting on something that is already happened or reflecting on something as it happens. And then the third way is experimentation, which I know a lot of you guys, you're doing research. And so you're doing experimentation where observation, you're kind of collecting facts, reflection, combines those factual knowledge. And then you can use experimentation to verify your results. So you can kind of put those three things together. But the one thing that I always come back to with reflection is we don't really learn from an experience. We only learn from reflecting on that experience. I know that sounds a little deep, but we really need to think about what has occurred and make changes after the fact, in order for us to actually learn from a situation.

Dr. Staci Saner:

The thing that I do a lot with faculty and students who take my courses is very simple. It's a what, so what, now what? And I think it's a great way to reflect. And so what, you know, what did I learn, or what experience did we just go through? What happened? And then, so what was, so why was that important? Why is that something we need to think about? Why is that something we need to address in your particular situation with QI and then now what? So now that we know this, what are we going to change? What are we going to do differently in order to move forward?

Dr. Staci Saner:

And so I could see reflective activities really being an important aspect of quality improvement for everyone dealing in the hospital system. Now you asked what are some of the problems with that? And, well, let's look at the reality of the situation. Time, or technically the lack thereof. You all know you've got patients to see and you've got your research to take care of. So actually taking the time to stop and think through what happened, why did that happen and what can we do differently, that does take time. But the research shows by actually doing that, you're going to get better outcomes in the future than just keeping moving on that same path.

Dr. Max Boakye:

We want our residents and trainees to reflect about the errors that happened. Either their own errors or the errors of their colleagues. In thinking about reflection as a tool in learning, you can reflect on what went well or what went bad. Is one better than the other?

Dr. Staci Saner:

No. I don't see it as one as being better than the other, because if you're thinking about what went well, there's a whole process around that. But either way, by reflecting on things that went really well or reflecting on poor outcomes, you're going through the what we call this process of metacognition or thinking about your thinking. And by taking that, thinking about your thinking, take it and articulate that and making your thinking visible, whether it is with your colleagues or your supervisors, then once you make your thinking visible, then you're able to make connections to other things. And that is where change can really happen. And other people can listen to how you thought about something and that

may be relevant in a different situation. You'll be able to look at the outliers, like, was this particular situation an outlier situation? Is this something that's just never going to happen again? Or is this something that we really need to take into consideration as we move forward?

Dr. Max Boakye:

Is there any data on how often health professionals engage in reflective practice?

Dr. Staci Saner:

Not that I'm aware of. Let's put it that way. I think for me, it is something that I really push on faculty who take my courses and things that I do with faculty, but I have never seen any direct research that really quantifies or looks at reflective practice. I mean, there are ways to assess your own reflective thinking, but it's really not something you see a lot.

Dr. Max Boakye:

How do we assess the quality of your reflective thinking?

Dr. Staci Saner:

Well, you have to analyze your own thinking and that comes back to that metacognition and articulating your thinking. And you really want to think about the situation in different realms. So and the QI situation, you want to think about it from the medical aspect, from the provider's perspective, think about it from the patient, think about it from the institution, the hospital, the clinic's perspective. And then once you have looked at the situation from these different categories, then you take that and talk about what did I learn and how specifically did I learn that? And how does this matter, or is this significant? And so it's hard to get across, but it's really more of a group project where you come together and ask big questions. How am I going to use what we've talked about in the future if that makes sense.

Dr. Max Boakye:

Mm-hmm (affirmative). Yes. One more question on reflection, what influences hinder or can enable the development of reflection and reflective capacity?

Dr. Staci Saner:

Well, when I think about that, I mentioned this before, time, that is obviously a big issue, especially for lots of clinicians. So you need time to be able to do it. And sometimes they really need some reflective activities that are kind of staged, if you will. So maybe you actually do the what, so what, now what, provide them a framework to do the reflection, because if you just say, okay, go reflect on that, people can be like, oh, what do they mean by that? I don't know what they're talking about. And then having the capability that is also... Sometimes when we're dealing with residents or fellows, they're trying to prepare for board exams and they've got patients to see, sometimes they just don't have the mental capacity to do that sort of thing. So we need to make sure we free up some cognitive space if you will, for them to do that deep thinking and kind of think outside the box

Dr. Max Boakye:

Earlier, you mentioned strategic questioning. I came across your paper, which you recently published is called Questioning Aid for Rich Real-Time Discussion: A Tool to Improve Critical Thinking in Clinical

Settings. And this was published in the AAMC Meded portal. Do you want to just summarize this paper and what that QARRD is?

Dr. Staci Saner:

What the QARRD is? Absolutely. Absolutely. The QARRD. And when we say QARRD, we're talking about Q-A-R-R-D not C-A-R-D. So it's an acronym. It does stand for questioning aid for rich real time discussion. And what the card is, is a tool to help faculty actually do strategic questioning. And so you're probably like, well, what is strategic questioning? There's lots of characteristics of it. But the important ones to be thinking about is strategic questioning, promotes critical thinking and clinical reasoning in our learners. These are generally deliberately developed questions for the learner. They elicit elaboration from the learner. So we talked about elaboration a few minutes ago and there's a social aspect to it. So it's between you and the learner, or a couple of learners that are with you. So one of the things that the card is based on is Bloom's taxonomy.

Dr. Staci Saner:

And so for those of you that are not familiar with Bloom's, you kind of imagine a triangle and at the base of that triangle, that's where your fact-based cognitive skills are. So that would be remember and understand. And then as you move up that triangle or pyramid, you get more cognitively complex activities. So applying, analyzing, evaluating and creating. So the goal is really to help learners do more cognitively complex activities instead of just answering fact-based questions. And so the card is really a tool that has lots of different questioning strategies to help faculty ask more cognitively complex questions. And those types of questions really spur critical thinking and clinical reasoning skills.

Dr. Max Boakye:

Where can the audience get more information about a QARRD?

Dr. Staci Saner:

Oh, well, we do trainings on the QARRD all the time in the office of faculty development. We've even done it outside the university as well. We've had several institutions that have gotten training from us. So we're happy to do that at any time. And I'm sure you can provide my web link or email in the show notes.

Dr. Max Boakye:

Yep. I definitely will. Finally, I want to talk about motivation. I have a lot of residents, they have little time, they have stress, they're working long hours and you get a sense that with some residents doing a QI project is just checking the box and moving up.

Dr. Staci Saner:

Yes.

Dr. Max Boakye:

And they say, oh, not another QI lecture. What is the role of motivation and growth mindsets in self-directed learning. In particular, I want to comment on the works of Dweck and Daniel Pink, Why Carrots and Sticks Don't Necessarily Work. What do we know works?

Dr. Staci Saner:

Okay. Well, when you think about motivation and thinking about learners from that aspect, so they don't want to think about QI projects. So one of the things that we need to help learners see is to help them develop what we call a growth mindset. And so Carol Dweck is famous. She has done lots of research on that and it's really about being open and knowing that you can do things, but it takes some effort. It takes some activity in your brain to be able to do those sorts of things. So there are kind of two types of mindsets. There is what we call a fixed mindset and a growth mindset. And so the fixed mindset is I can't do this. I'm done. This is too hard. I'll fail. I can't do it, where a growth mindset on the other hand is someone that says, all right, I can't do this yet.

Dr. Staci Saner:

I need more practice, or I need to work at this some more. And then the other thing that you talked about, or you asked about was Dan Pink's work in the book drive. And what Pink talks about is how carrots and sticks don't really work. And some of the research that he has pulled up and has done it talks about how using carrots and sticks can lead to some short term rewards or short-term thinking is what we think about a lot of times, but it really doesn't get at the long term motivation. And so what can help folks with motivation for longterm type activities? Well, he talks about a lot of things, but one of the things is autonomy, and I'm sure you guys deal with this issue all the time. And so how much supervision does a resident have? How much autonomy can I allow this particular learner?

Dr. Staci Saner:

And so autonomy is really important for motivational purposes. So you have to provide them some autonomy and some autonomy in the different tasks that they are doing. So that's really important. You also have to talk about mastery. So what are they... The effort that they're putting in and what are the things that they can actually master. And when I think about mastery and that sort of thing, I think about grit and that is Angela Duckworth's work. And what Angela Duckworth has said over and over again, to help people develop grit or to become grittier, which is basically having passion and perseverance for a particular project, or whether it's becoming a physician, that takes grit. And in order to do that, we have to help people develop a growth mindset. So when it comes back to all of this, it's like it's all connected. So the work of Dweck, the work of Duckworth and the things that Dan Pink talks about with autonomy and mastery and purpose, those things really all come together to help motivate folks to do things for the longterm.

Dr. Max Boakye:

Wow. It's really awesome. In the last minute or so, any summary points you want to make for a healthcare personnel educators?

Dr. Staci Saner:

Oh boy, there are so many, but one of the things that I would really encourage people to do is when they interact with their learners, interact with their residents and fellows, think about introducing them to the things that you do. So don't be afraid to admit when you're wrong about something, don't be afraid to say that you don't know something because by actually showing that you are human also, they can not feel bad about getting an answer wrong when they're asked a question or if they make the wrong decision in a particular situation. We are all human and learning is hard work. And in order to learn, sometimes it takes some failing, but that's where we learn. And so I just encourage everyone to help their learners and let them see that learning is hard work and that it takes time and it takes effort.

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Dr. Max Boakye:

Well, that brings us to the end of the conversation with Dr. Saner. We want to thank you so much for this invaluable conversation on applications of learning principles, through improving health care quality and teaching. Thank you so much.

Dr. Staci Saner:

You're so welcome. Thank you.

Speaker 1:

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