Linking the Scholarship of Teaching and Learning to Clinical Education in Audiology, presented in partnership with the University of Pittsburgh

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It's my pleasure to welcome Dr. Mark DeRuiter to audiology online. Today's presentation is in partnership with the University of Pittsburgh. If you'd like to learn more about Dr. DeRuiter and the University of Pittsburgh, you can read about him on the course registration page.

But I'd like to hand the mic over to you now. Dr. DeRuiter. Okay, thank you very much. It's really a pleasure be here.

Today. I am very excited to talk about the scholarship of teaching and learning and its intersection into our clinical education. You have my disclosures here, and I'll just point out in the disclosures, one of the non financial disclosures is that I serve on the board of an open access journal called Teaching and Learning in communication sciences and disorders. And I'll probably mention that journal today. I don't have a financial interest in that journal, but the option for you to think about reading and publishing in that space exists for you.

And so I just want to make sure that you're aware of that option. We have some learning outcomes for today, and usually I don't spend a lot of time reading learning outcomes because I know I can trust everyone's literacy out there, but I do want to go through them and just talk with you briefly about how I see these like a funnel today for our learning outcomes. We'll begin with kind of the broad end of things and just defining the scholarship of teaching and learning. But then we'll link that into evidence based education, which could be an area where maybe you've spent less time, perhaps you know some about scholarship of teaching and learning, but we're going to link it and cross these two into each other really well. Then we'll talk about some taxonomies of learning.

For many people who spend time in clinical education, they'll tell me, yeah, I know some of these, but I want to build them out a bit for you because you'll see how they fit

the theoretical place that I'll come from when I think about clinical education and our scholarship of teaching and learning there. And then third, we'll talk about some ways you can implement evidence based clinical education into your own clinical environment. That'll be the narrow end of things, where we'll get you thinking about what you know, what you don't know, and then a bit about what our discipline knows and doesn't know. In this is McKinney is an author and scholarship of teaching and learning and thinks of this like a continuum. And I wrote the objectives kind of this way.

By attending today, you're probably what's called a good clinical educator, and that would be that end of the continuum. And then there's building yourself up to being a scholarly clinical educator today. We'll spend some time in the meat of that, but then you could take that even further and be a person who contributes to the scholarship of teaching and learning. And so these objectives are written that way. If you want to think of it like a continuum and think of your own professional development and how you might move yourself forward on a continuum by engaging with this topic, the scholarship of teaching and learning, which I'm going to define for you in a moment.

But I want to give you kind of this broad introduction, thinking about the fact that Sotollllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllll or the scholarship of teaching and learning isn't really new. Clinical education in audiology isn't new, in my opinion, and it's a bias. So I want to reveal that bias to you. Something that deserves more attention is more clearly linking the scholarship of teaching and learning to evidence based education, so that we're putting our effort in the right places and most efficiently and effectively educating new clinicians. So in economics there's this principle called opportunity cost.

In economics, it's linked to dollars, right? So it's like, if you were to purchase the newest and latest smartphone, what would you give up that you wouldn't be able to purchase? Right? What opportunity would you miss because you had spent your

money on that smartphone? We can think the same way with our students and their time.

When we engage students in a clinical environment and we have them repeating tasks and learning with us, are we being efficient or are we spending time in a way that takes them away from something else that they could be or need to be learning? And so I think a lot about this, and I think a lot about efficiencies and how we can do this most effectively. I'll tell you the spoiler alert today, as I don't have that answer, right, but it's a conversation that we should all be engaging in as clinical educators and classroom educators. You'll see that second bullet there, or that end bullet continually affirming how clinicians are providing instruction. So one thing, if you're a clinician and you're in this session today and you're working with students, whether that be early in their program or audiology externs, I'm not going to be here to say you don't do a good job, right?

We are grateful and we know that our model depends upon students leaving a university setting and going out into the world and continuing those educational opportunities in spaces outside of that home environment. And for that there's a big thank you. And then that engagement with how can we all yoke our efforts together to do it in the best way that we can? So that gives you kind of a foundation of introductory thoughts. People have asked me occasionally, how did you get here?

How did you get interested in this topic? And I became really interested in thinking about learning and how it relates to the clinical space. Early on, about 1998 to 2005, where I was teaching students in the classroom concepts of speech and hearing science and introduction to audiology. And I had that opportunity to observe learners as things came along and they learned those concepts. So think about, I always pick masking, but masking is a great example where there are multiple elements, multiple

terms and multiple ways to think about the concept that a learner needs a little bit of time.

Some need more time than others, but it's really fascinating to observe a learner where they say it clicks. Oh, I get it. I get how intraoral attenuation as a concept relates to crossover as a concept relates to the masking plateau. Right. And they thread that together and you can start asking them questions in the classroom space and see you're getting it.

It's pulling together for you. I've always enjoyed that because it's like that aha. Moment for a learner. But one step further was once I started to see this and once I started to learn how learners were putting information together, I started talking with clinicians and asking them about what they recalled in their own experience of learning. So think of someone who's been a clinician for eight or ten years and asking them what they remembered about concepts that may be more difficult or more abstract in the field.

And it's interesting because most of us forget our own trajectory of learning, and we forget some of the challenges we had in learning given content. Instead, it becomes rote, right? So a different way of thinking about that might be if you drive a car, when you learned to drive a car, it felt very complicated, first off, and then many of us, if you're a driver, you may have more recently had that experience where you think, oh, how did I even get where I was going? I did it without thinking about it. I'm not recommending you do that.

Right. But across a trajectory of learning and a trajectory of time, things change and we might forget just how complicated it is to take on a new topic, learn about it, apply it, and actually have expert level knowledge and skill in it. So my options in having those conversations grew because I went from working in the classroom space, which I've worked in throughout my career. But I also became a clinical director, so I was placing

doctor of audiology students, both for their initial placements as well into externship placements. I did a lot of that, especially at the University of Minnesota, but I just had a lot of time to chat with people and ask them interesting questions about their learning and what we forget and what we take for granted.

And these things become really critical if you are a preceptor and you're engaging with a student who likely does not know all of the things yet. So that pushes us toward a thing called the scholarship of teaching and learning. My broad label for it is always learning about learning, but that's too broad. So I've chosen this from Peter Felton. Peter Felton is well known in the scholarship of teaching and learning.

Here, the definition is inquiry focused on student learning. It's grounded in both scholarly and local context. It's methodologically sound, it's conducted in partnership with students, and it involves going public. I want to pull a few things out of there. So this inquiry or studying or researching student learning, you see that there.

We talk about scholarly and local context. So if you're a clinician in this session today, right. You are that local context. And we know there are things about your clinical space that are different than other clinical spaces. So I'm going to weave some of that in today.

But it's really important as a learner engages with you and goes from being a student to a novice audiologist. Right. There are elements of your space that are important. When we study this, we look particularly at methods, and I'll talk about some methods today for those who conduct research in the space. And then this concept of conducting the work in partnership with students is important.

So we don't need to make students be something that we put under the microscope. We can actually engage students. We can say, hey, we want to study this element of

your learning, and let's look at it together. Let's get your buy in. Because sometimes just talking about it gives us a great deal of information from students into what their thoughts and perceptions are in learning.

And going public is the final piece that I want to pull out. So going public means disseminating, and that's disseminating via sessions like this, poster sessions, journal articles, book chapters, a whole variety of ways. But simply put, right, if a program is doing something really well, there should be this desire to let others in the discipline know how it works, why it works, so that it can be shared, and we can all become more efficient in our student learning, thinking back to things like opportunity cost.

Okay, so you've had a definition of Sotolllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllll a little bit about my journey of getting to this space. What I'd like to do now is pull in a little bit of your thinking about what might be messy in this space. So Sarah Ginsburg, she's at Eastern Michigan University, and I put together this model in an article that we have that pulls together on the left, evidence based practice. And I don't think I need to spend a lot of time in that triangle. Right.

It's a very familiar one to clinicians. It's where we're looking at external evidence, our internal evidence, our patient or client preferences. This is that foundation. Usually when we come in as a graduate student, this is what we learn about as clinicians, how to make informed decisions.

What we need to think about in clinical education, though, is evidence based education. Well, what is that? Well, if you look at the triangle on the right, that's kind of blue in color. What you see are the three circles, kind of a Venn diagram there, and the middle where they intersect. You have Ebe, or evidence based education.

And this includes three areas, one kind of the lower one there, pedagogical content knowledge. This would be your knowledge of your area. What you bring to the table as that educator, what you know and what you might know about how to teach something. For many of us in the clinical space, how we know how to teach something is the way we learned it right in the past. Then to the right of that is the instructor learner interaction.

This is simply our time, either in a classroom or in a clinical setting with a learner or group of learners, and how that works and how we gather and interact with one another. And then above that is SoTolllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllllll, or the scholarship of teaching and learning. So all three of these come together to create evidence based education. What Sarah and I did was think really about the middle. That's kind of that pinkish, orangish color there for you.

But when we put students in a clinical setting, what we know is there are a lot of areas that I might consider. Air quotes. Messy. Right. So you, as a clinical provider, you may have a standard of how quickly you need to see patients.

You may have patients who you know really well and have great relationships with, and you're working with a student, and you have to decide how much interaction the student will have with this patient, who you know really well and how much you're going to take over. There's just things like paperwork and documentation, too. And the flood of that work that comes into play, that all of these things and many, many more, these are just some examples, but start to make the clinical education process, we lose some control because it's difficult for the university program to know exactly what those demands and pressures might be on a clinician and how they might vary across different clinical settings. So our point here with this model was to simply say we're trying to have students and clinicians use evidence based practice, but then as they

learn, there's kind of another model for that. And in the middle, it becomes complicated.

And so a person like myself can talk about opportunity costs or talk about needs for research in the space, but it's not as easy as it looks. Instead, there are complicating factors that we might not be able to control. So if you think about this, even though there are things that are complicated to control, there might be areas where we're ripe for some research, right, and where we could ask some questions. So, given this, what I'd like to do is step into some theory and then talk through that theory and kind of how it relates to learning and the scholarship of teaching and learning, then bring you to a place and a theory that I feel combines multiple theories and the way I think about this space and then how we all might move forward together. So I'm going to briefly walk through three taxonomies.

Bloom's taxonomy is one. Many are familiar with Miller's. Maybe you're familiar with it, or maybe not. And then we'll spend the most time with Fink's significant learning outcomes. So let's start with Bloom's, and then we'll build off of that.

So Bloom's taxonomy, you see 1956 here, as its base, has knowledge. So, as we think of a learner in an audiology program, we would think here of a learner knowing some basic concepts that we might be able to test them on in the classroom. And so we could look at their understanding. If we go back to masking of concepts like an oral attenuation, et cetera, and simply get the facts from them, what do they know? And then we build on that, right?

And we look for how well they comprehend that information so that when they get into a clinical situation, we start to look for how they apply what they know. Well, masking is a nice example because there are different transducers. There's masking for pure

tone audiometry. There's masking for speech audiometry. There's a variety of ways we can think about it.

And so students have to analyze what they know and synthesize it within that topic so that they can best evaluate what needs to happen in a clinical situation and make good clinical decisions. So it kind of comes to a point where if a learner is able to fully evaluate everything that they know, right. We would say we've reached the peak. What we know is that Bloom's taxonomy has been revised, similar number of steps, but some different words. And so, obviously, I know you can read them.

I'm just going to pull out that tip of the pyramid there, create. So another way we might think about creating here is sometimes we ask students to do some pretty complex things where we'll ask them to generate a case, or take a case and generate what they know about it, and then report out in like a grand, round situation what they know, what their clinical decision making was, and how they went through that process. That would be another way to think of a student who is demonstrating high level skills with the knowledge that they have from the base of that pyramid. As I mentioned before, I think those things are pretty clear, and I think many of us have thought about them. I like to nudge toward Miller's pyramid of assessment, because it's one.

Sometimes we don't all talk about it very much here we just have another taxonomy of learning. But what I enjoy about it is, you see, there's some rollover of Bloom's concepts. However, Miller's pyramid, and it was used in medical education in its early years, it kind of breaks it into cognitive elements as well as behavioral elements. So what might a student demonstrate in class? And then how might they demonstrate clinical competence and wrap that into high level clinical performance later?

So there's almost like this breakpoint between cognitive skill and demonstrated behavioral skill based on those cognitive elements. What I like about this is, having

worked with students throughout the years, it gets me thinking about how we have students sometimes who may struggle a bit in the classroom, but they get to their clinical environment, and a clinical instructor will say, wow, this student is great with patients. And I'll think to myself, isn't this interesting? I might not have predicted that, or the other way around where a student does very well in the classroom and demonstrating their knowledge there, but then they get to clinic and it seems to break down somehow, demonstrating on the behavioral end of things. And then we wonder why, what happened here?

I think it's useful, and I think what we can do is definitely, theoretically, think about those things. But at the end of the day, the way I think about this is, these pyramids are quite linear in how we might think of a student moving through, demonstrating knowledge and skill. But in the end, I think clinical education is just a lot less linear than we might think it is, or maybe we might hope it is. So think of it. If you're in a space where you're working with students, if you're a preceptor or a university instructor, think of a student who comes to you and says, maybe they're in their second year, says to you, well, I've seen part of x procedure, but I haven't seen it all yet.

And you think to yourself, okay, so you didn't get all the pieces end to end with one patient, which isn't a fault, but now you need to pick up the pieces that you didn't experience in a different way. Here, I often think about the entire process of hearing evaluation, to counseling, about hearing aid selection, to hearing aid orientation, to hearing aid programming and evaluation, to verification and validation, right? If we took that, we could divide that into many steps, and it would be great if all students could see each of those steps across all individual patients to see it start to finish. But if a student's in a part time rotation, it just might not happen that way, right? And so the way the clinical education might come together for that student is good, it's effective, but it's just less linear.

And it's our role to try to figure out what pieces do you have and what pieces are missing? And along the way I'm going to argue, or maybe the student can track that, but that pushes me toward thinks, significant learning outcomes as a taxonomy of learning. And it takes into account this less linear nature. It bakes in some pieces of what could be more linear, but it accounts for other elements. So you see here six different areas of foundational knowledge, application, integration, human dimension, caring, and learning how to learn.

What I'm going to do is walk through each of these, assuming that maybe this is newer to you, and then relate them back to the other taxonomies to see where we may have some overlap, and then spend more time talking about how they might diverge and how they might be useful for us as we think about audiology, clinical education. So let's look at foundational knowledge first. And this is an easy one to link to the other taxonomies. It's the base of the pyramid. What things do you need to know to be an effective clinician?

Often these are the things we think of coming from the classroom and then working their way into clinic and the same is true of application, where we just nudge that classroom information forward. We ask students to apply that information, sometimes in a more theoretical way. We could do that in exams. We could have practical exams. We could also do this in written format as well as clinical situations, and then integrating that information or putting it together and using what they've learned in a useful way.

So again, we can think of. I've drawn the line through my pyramid there, right? Moving from more of the cognitive level, definitely into the behavioral pieces and into clinical space wouldn't always have to occur in clinic. We can see great ways that programs test for integration by giving students cases to review. But we're looking here for a

student to not learn little bits in isolation, but pull it all together and begin to make good clinical decisions.

Where things really diverge and where I like to spend my energy thinking about this is at the level of human dimension. So human dimension would be having our learner think about using their learning to help the people they serve. So that's why they're there in the first place, right? They're there to become clinicians. They are there to best understand how to help their patients.

When they come to your clinical site, do they look at your mission, vision, and values at your clinical site? I would recommend they do, because that'd be a nice link, usually, of who you are and what you do and how that links to the human dimension here. That next bullet, though, is an interesting one. Success or failure are considered relative to how the individual perceives themselves. So it makes sense if we think of it this way.

Some students will come to us very early in their educational career. They know that they have a lot to learn, and we support that, right? We usually tell them, we know. You don't know all the pieces here. I'm here to support you.

But over time, we're going to begin to expect more from them, and we're going to begin to assume that they see themselves as becoming the clinician and that they lean on that preceptor less and less because they see themselves as the new novice clinician. The human dimension can occur across your whole career, and that's an important thing to remember. We're all learning. You're here in a space of continuing education, right, where you're learning. And so thinking about how we help people, thinking about developing the ways we help people, and knowing what's best all come from development of our desire to engage with humans and the human dimension, even after we've finished a graduate program.

And then there's caring learners care about content and understand why they should care about it. And this one to me, always makes me scratch my head a little bit when I bump into a learner where I wonder if they have fully connected with the caring. Now, what I mean by that is not a negative statement. What I mean is sometimes I think a knowledge piece might be missing, and so the student doesn't understand fully why they need to care about some concepts that they haven't fully integrated yet. And so they might let something go, they might let something pass, and we need to bring them back to caring about an element of practice that perhaps they just haven't fully threaded together yet.

We also have to just think about our learners and who they are and what their motivations are. Why are you in a doctor of audiology program? Why are you engaging with this? Is this the thing you wanted to do, or is there some other motivator? Sometimes families, parents really motivate students to attend a program more so than the student themselves.

Caring about where you are and what you're learning is critical. And then there's learning how to learn. This is refining that process of learning over time. So focusing on you, focusing on what you know about the way you learn and what might motivate yourself and others in learning. So I can tell you as a learner, if it's hands on, I prefer not to dive in immediately.

I prefer to watch someone do it right, learn the concepts of it, and then I will begin to dive in. Whereas we might have other learners who really want to just dive in and do it and learn as they go. To me, those are learning how to learn elements. What are you comfortable with? What makes you feel safest?

Not big on learning styles per se, but more just how are you most comfortable in your learning so that you are efficient and effective in that learning? So it brings us back to

this concept that clinical education probably relates pretty well to Fink's taxonomy, where there are many different pieces, they interface with each other. But thinking about humans, our caring for humans, and what motivates us within that learning are critical elements in a nonlinear space. So if I'm not going to pick up all the pieces, one, two, three, and so on, and it's going to be on me as a learner to say, hey, I didn't catch every piece of that last appointment because I got pulled back to class or whatever the case, how am I going as a learner, going to care enough to engage to say, but I still need to know that and I still need to learn that and make that happen. So think about it and think about ways we might inspire that in our learners.

There's some real challenges there if we think along Fink's taxonomy and approach. Fink would argue there's a different way that we would design learning. And this design isn't just for the classroom. It comes into your clinical space as well. It would have three main areas.

So a beginning, middle, and an end, which is always great, right? Because that's easy to remember. But let's unpack those a little bit and embed some other theory pieces into those. So in Fink's initial phase, as you are building out and planning for the learning, the idea here would be that you'd set your expectations for that learning. So you know that you're going to be engaging with a third year doctor of audiology student for three days a week in your practice, and this is going to be the 7th time you've engaged with one of these students for, let's say, a 14 week experience.

Well, you may have written these out. You may not have, but most of us would say there's a good sense of by the end of the experience, whatever it is you do in your practice, that you expect each student to walk away with each having a particular level of competence. Now, maybe some things, you know, they can't fully do on their own, but basically what you're doing is you're setting an expectation, and then you're saying, what is it going to take to make that expectation happen? And those

expectations sometimes are the things for those situational factors that don't get enough consideration. I am in a busy hearing aid dispensing practice, and I'm working with this student.

And so my expectation is by the time they leave, they can handle all elements of both the hearing assessment all the way up to the hearing aid fitting process. Let's imagine that's my expectation. Well, that's a great expectation, but I need to determine that that can actually happen through the situational factors. Do we have the equipment that exists for doing this? But then other things like the patient base, where are enough people going to come through to actually make this work?

With the student schedule, if it's part time, some of those are environmental, some lean more towards situational, but making sure that if something doesn't work, we understand why it doesn't work because it might not always be on the learner. I think back to when I was at Minnesota, weather is a component, and I had a student who rotated through, and I think it was Fridays of each week, they would do vestibular. They were going to be in a 15 week rotation. They were going to leave with some competence in vestibular, even though it was only one day per week and we had this run of bad Friday weather snowstorms where people cancel. And so the student in that situation couldn't develop the competence if we stay with that schedule, right?

So it's like thinking through, can we adapt the schedule, or in a nonlinear way, do we say we're going to have to give up that competence in this setting and make it happen in the next setting, or how do we build it? How do we make it work? There can be a lot of consideration in that initial phase that's really critical. Another element of your initial phase is thinking through backward design. This is based on a work of Wiggins and McTee, but thinking through very carefully.

If I've identified an expectation for you and I know I want you to have it, then what's the actual result I'm expecting? What evidence do I need to know this student has it, and then what's my plan for getting that for them? So, thinking very carefully about expectations overall and then the goals along the way and thinking backward into those goals as to how will I set the stage and begin with the end in mind? That is, backward design very much takes beginning with the end in mind into account. I know what I want you to do.

Now it's my job to think through all the steps. In Fink's intermediate phase, we think of things like the model for the learning, and that would be things like the structure and the strategy for teaching. So imagine we're in a busy practice. How is the clinician going to engage the learner in each appointment? Are you going to have the learner do the work and you are commenting on the work?

That might be a strategy, and you would call that a learn by doing structure. Or are you going to see the patients essentially together? Right, where you work together to see each patient, and on the fly, you are checking in to make certain that you fully understand the student's knowledge and skill and that they're getting to perform each procedure that they need multiple times while they're with you. Structure and strategy go together, and they take a little time to think about and then think as these final tasks or remaining tasks, thinking about how a student is graded. So, knowing the grading system, if you're new to being a preceptor and you accept that student, how are they graded?

What does that look like? So that your eye is on that early on in the process, but then also planning for yourself as the preceptor, how will I be evaluated? How will I know things worked or ways I might improve? And I have some thoughts on that that we'll talk about in a few minutes. So people often at this point, it's like, well, tell me some data.

Tell me something more. And so let's take these theoretical pieces now and let's learn a little bit about what we know or what we don't know in the audiology clinical education space. Worked with a great student at the University of Arizona, Anne Miller. And Anne did a capstone project, reviewing in a critical appraisal of a topic approach, which I can tell you about that in a moment, but looking at through allied health database, pulling what we know about clinical education in audiology and digging deeply into what are the articles, what are the themes, how many are empirical studies, and how many relate to a taxonomy like Fink's. So Anne conducted this work.

In the references, you'll see a reference to this capstone project. It's publicly available. You don't need to pay. There's no firewall or paywall. You can get right at it.

When Anne started her search for this critical appraisal, she did audiology and education to just see how many articles are out there. In allied health, there were 950. When we added clinical to the search terms there, it yielded about 230 documents looking from the years 1995 to 2020. Now, in end of this, this is, like I mentioned, a cat or a critical appraisal, not a systematic review. Systematic review would look much more widely, would look across disciplines.

Mormer et al did this in 2013. Great publication in Ja. There's a reference for you for that, so you can take a good look at it. This was more focusing right down into audiology as a topic. And what we found there, what Anne found there was, there were few empirical studies of audiology education, and of course, particularly linked to Fink's taxonomy.

And that wasn't a surprise. But I want to spend a moment here just thinking about this, because it's important for us to remember there aren't many studies out there that look at how learners learn and measure what they learned. Right? Sometimes folks will take

a little issue with this and they'll say, well, but there's a bunch of articles, and I'll agree, or they'll say, there is some empirical study. And I'll say, yeah, but when you dig into it, it's often about students perception of learning, but not necessarily quantifying what they learned how effectively they learned, or efficiently, and threading that all the way through to knowing what it takes to be a great audiologist or great practitioner.

So because there was little empirical data here, Anne went ahead and looked for themes in the articles in those remaining 230 and came up with the themes that you see here.

Some of these themes I'm going to pull out for you in a moment for being a good clinical educator.

The second theme there, simulation. I'll let you know. I've got some ongoing work with another student right now because I want to dig into that. Right. With the pandemic, we've had kind of an explosion of simulation work in the scholarship of teaching and learning, and so we want to look closely at that.

What do we know there? Were there empirical studies, or are they more reflective on student perception of learning? More to come. But do know that that's an important space as we think of things like opportunity cost. If you think about this, there's a great number of reasons why there aren't too many studies on this.

We don't have many audiology students in a cohort. There's ethical issues. If we think teaching someone a better way is the better way, why would we withhold it from other students? And sometimes there's just less focus on the mechanics of clinical education in clinical training and measuring these things. And I think if we opened up microphones, you all could come up with a host of other reasons.

But I'm not faulting the field. I'm just saying there's a lot of reasons why these things may not come together. But I think I can inspire you to think about ways you might contribute and how you could contribute if you're a clinical educator or preceptor. Thinking through these things is much like any Pico question. So, as you'll recall, PiCO questions are identifying a problem, identifying a needed intervention, having a comparison group, and then looking at the outcome there, right.

PiCO as a model fits really nicely for clinical education because we use PiCO in clinic. We can also use PiCO in how you learn, right? How a group of learners might have an intervention and another might have no intervention or a different type, and then comparing that and looking for outcomes there, people who want to get started in this need to dive into what's out there. I've already told you there might not be a lot in audiology, but I've given you a list here of places you might start looking for articles. I've got another, more extensive list of journal titles.

You'd be welcome to reach to me directly if you're interested in them, where you could look across disciplines. So that's the important part here. But we've done some work to look at a variety of journals that may have information that you can curate based on clinical education generally. And then you start reading, and it's interesting. You can read and read and read about clinical education in different disciplines.

It's really helpful. But what I've discovered is there's so much to read. I was joking the other day and said this is an easy space to stump the presenter, right, because there are so many things to read and I feel early on my journey still in learning about how people learn.

But reading and getting your great ideas together can help you then think about what methods you might use in any research you conduct, whether they'd be quantitative, meaning using numbers, right, correlations, other measures, statistical analysis versus

qualitative. And that's where a lot of research in learning comes up. Here we have more descriptive data relationships. So looking at how people might respond verbally and pulling themes, people who are quantitative researchers, and we have many in the discipline, which is great, but they'll often find qualitative research. They'll tell you it's not my thing or really not want to engage with it at all, but there can be great qualitative research out there.

And then you can mix the methods, you can have quantitative and qualitative research that's conducted within one study of teaching and learning and clinical teaching and learning, and then you design that work, whether it's going to be descriptive or correlational or experimental or quasi experimental. My point in the end with this is, if this interests you, if this is a space where you think, I'd love as a preceptor to start asking some questions, I would advise you to consider some kind of mentored relationship to make that happen. Connect with maybe the university programs who you work with. Talk through the big issues and the questions you might have. Talk through the institutional review board process and think about a board of mentors, meaning a variety of people who might work with you and mentor you in asking questions about efficient and effective clinical education in the field and give you a variety of viewpoints on that.

And then just if you did it, make sure to disseminate it so that everybody can know. That's the thing that becomes really important here, that others need to know and others even need to know your failures. For many people, though, asking a research question is just overwhelming for them. And instead they'll say, I'd rather nudge back toward thinking through the initial, intermediate, and final phases of learning and maybe what some good scholarly approaches might be there. Let's do that so that you can leave here with some tools you might use right away.

Well, in the initial phase, I've already talked a lot about it. There's backward design and just really considering your expectations, how you might deliver to meet those expectations and evaluate any result there, so that you've got a path to assisting that new clinician in meeting the expectation. It's not just assumed it'll happen, but it's very clear what that learner is going to do in that space to meet the goal and then thinking about a process that's not entirely linear. So when I was working with Anne, with her capstone project, most of that came from Anne coming to me and saying, hey, I discovered in a part time clinical placement I won't get to see everything. And she had made this great matrix of all elements related to hearing aid fitting, where she was checking off, like, have I seen it?

Have I seen real ear? Have I seen somebody do the cozy and look through that and talk through that? All the pieces were there where she could check the boxes and say, by the time I'm done, even though I didn't see it with one patient, I can say I've seen it as a whole. That might be the way you get at this, through backward design. I mentioned Mormer article 2013, that systematic review.

There they have a placement expectation worksheet example. But here you have a worksheet where you set the goal, you set the expectation and describe for the student how they will meet the expectations. Feedback is another really ripe area for some research and a great way for you to improve as a scholarly preceptor or clinical educator. Being timely with your feedback, offering positive and constructive feedback. I've got this reference of Kelly here.

This is in nursing. But what I really appreciate about this is when students are interviewed and can give their input, it's sometimes less about what the preceptor knows and more about how they deliver feedback that students see as important in their learning. So sometimes we feel like we've got to know everything, right? If we're

the preceptor, maybe not. Maybe it's more in our delivery and how we move things forward in our intermediate phase.

Here, we could support students critical thinking through things like problem based learning. I give you that. I know in a clinical space it's way more complicated to do that and then simulation. But these are two hot areas. But one, if you are looking to implement something quickly in your clinical space.

To be a better preceptor would be the 1 minute preceptor based on the work of Nair at all. It's a five step process where you're engaging the learner in just a problem, maybe that they've seen in clinic and getting a commitment from them to talking about that and then working through, probing them for the evidence they've used to make their decisions and then reinforcing what they did right, moving them for errors or admissions, and talking through what they might do better next time, and then teaching a general principle. So to me, a great 1 minute preceptor often is the student who does masking for puritone audiometry, but then forgets to mask for speech audiometry. And it's like the 1 minute preceptor is a great way to talk through what went well, the principles of masking, what didn't work so well, and how the student might cross check for that in the future. There's also great work in areas like reflection and just the role and power differential of relationships and even service learning out there.

Maybe someday we can talk about those things a little too much for a 1 hour session. But in your intermediate phase, there are definitely a variety of areas where you could look to be a stronger clinical educator. And then in your final phase thinks final phase is that grading system. So I mentioned this before. The grading system might be set for you by the university, but you might in your own space, based on fink's initial areas and backward design, you might say to a student, we're going to use the university rating scale 100%.

That's all fine, but I've got my own rating scale for you as well, based on the situational factors here, where I want to make sure you are the strongest clinician you can be. So maybe I can't factor that into your final grade based on the university's plan, but I can talk with you about what was most important here and give you good feedback, and then consider yourself and how you are evaluated. If you haven't seen evaluations from a university program as a preceptor, I get it, there can be privacy reasons for that. But talk with the program and find out if there are ways you can collect information about what you've done with the student and what works and what doesn't work. So it kind of brings us back to this model.

There's a lot going on in this space of evidence based practice, evidence based education, and everything in the middle and it's ripe for learning and research. And today we just talked about the tip of the iceberg here. There is so much more we could consider in the scholarship of teaching and learning, where I hope, if nothing else, I've inspired you to do a little more reading and a little more digging. Thanks for your time today, and I am open for any questions there might be. We would like to take this time to thank both the University of Pittsburgh and also Dr.

DeRuiter's time for putting together this wonderful resource for professors and also their students. We don't have any questions, but we do have a nice comment from Mariana here in the queue, and she just says thank you. So thank you, Mariana, for this nice comment. All right, thank you all. We'll go ahead and close the classroom.

Thank you so much, everyone, for joining us today on audiology online. Hope you enjoyed the class. This course will be available on demand in the course library. Have a great day.