

You're listening to Moving Ahead, The Physical Therapy Podcast by Washington University Program in Physical Therapy. In this episode, Dr. Steven Ambler, Director of Professional Curriculum in Physical Therapy and Associate Professor at Washington University's Program in Physical Therapy sits down with Dr. Carrie Holleran, Assistant Director of Student Assessment and Program Evaluation for the Program in Physical Therapy at Washington University. They discuss the process for redesigning student assessments for the renewed DPT curriculum.

Steve: Hi, everyone. I'm Steve Ambler, I'm the Division Director of Education at Washington University Program in Physical Therapy. And, today we have Dr. Carrie Holleran, Assistant Director of Student Assessment and Program Evaluation here to talk a little bit about assessment, learning, and some of the things we are doing in curriculum renewal. Hi, Carrie.

Carrie: Hi, Steve.

Steve: Can you tell us a little bit about your background, how you got to this position of Assistant Director of Student Assessment and Program Evaluation, and why a position like that might be necessary when thinking about what we are doing with the curriculum?

Carrie: Yeah, so, my background is in neurologic rehabilitation. I have started my career at the University of Pittsburgh Medical Center, where I spent a few years in clinical practice, and then I moved to the Rehab Institute of Chicago, where I maintained clinical practice and partly moved into a research role, where I became really interested in outcomes for patients, and how we influence outcomes, and always keeping sort of the end in mind. So, a lot of my work was in knowledge translation, measurement and implementation of evidence-based practice to clinical care. Along that time, I got involved in higher education, working with Northwestern University in Illinois in Chicago. And became very invested in advancing my career toward DPT education. And so, the opportunity at Washington University in St. Louis came about—which I was very excited about—and started as a faculty member. And again, sort of my interest in the outcomes and the end point in mind, what is our goal as a curricula, what are we trying to produce with our graduates at Washington University in St. Louis? Which sort of guides everything we do, not only on behalf of our learnings, but on our accountability to society and in meeting the health needs of society.

Steve: I noticed you mentioned a couple times: outcomes. And I was wondering if you could talk a little bit about. So, our curriculum renewal is focused on helping the profession develop a

competency framework and a connection across our continuum of education from entry level, or DPT education, through what might be residency or fellowship, or what just might be the life-long learning across one's career. So, can you talk a little bit about why adding a position such as yours might be important to start to do those things.

Carrie: Yeah, and I think that the position is one piece in a larger puzzle, and the entire curriculum renewal has really focused on what started with describing the behaviors, the knowledge, the skills, the attributes of someone who is an exceptional doctor of physical therapy learner, and then working collectively with faculty of even setting the milestones, or the graduations along the way toward expert level practice, and even breaking down within those behaviors, skills, knowledge, attributes. What are those mile markers along the way? So, it's really been a shared collective effort. But there is great support in having an individual help, sort of, the holistic view of all of the learners and some of the logistic things that certainly come up with daily assessment practice within a curricula. But we first have to standardize those outcomes and understand the milestone markers along the way, sort of the benchmarks of progression in those behaviors and skills.

Steve: So, are you saying, do you think that the, do you think that the milestones are something that can last across one's career?

Carrie: I mean, I think that is something that could absolutely be the case. You could, if you think about skill acquisition from novice to expert, we certainly can describe those behaviors across a variety of whether it's knowledge, whether it's attitudes, behaviors. If we have those tangible descriptions of those milestones along the way, yes, I do think we could have a description across, from a beginning learner to advanced expert practice.

Steve: I think, um, I want to before we get too far down into the weeds of assessment, you brought up your background in knowledge translation, and I wonder if you could talk about that in the context of learning and the learning sciences within our education community, across the profession. So, what's the connection there? I think in our profession, it's quite intuitive to everyone to think of knowledge translation, of clinical research, into the clinic. And I think clinicians are used to learning new things, realizing they need to change their practice. But across the health professions, we have been criticized of not doing it fast enough. However, it's been my observation that in education, I don't know if we've had that same view, historically. Though, what's been different here, what have we really tried to emphasize in taking the science of learning and translating that into the practice of teaching?

Carrie: Yeah so, there's been a variety of efforts, specifically designed to help faculty understand, you know, what is current state, what are we doing now, and what do we know to be the understandings within the literature, how do learners acquire information, really demonstrate true learning, and what of our teaching practices help drive that learning? So, it's sort of a shared effort: the efforts of faculty and what does the learner need to do. And then, with that knowledge, how do we create structure—whether it's through pedagogy, whether it is through our assessment practices—how do we couple all of those scientific understandings to at the end of the day, really drive learning in our learners? And it really involves looking at what we are doing and comparing it to the literature and finding out where there are discrepancies, where there are opportunities for us to grow.

Steve: You mentioned comparing to the literature. I think—what about comparing to the past? So, what's different about assessment when considering the science of learning to traditional assessment in health professions education?

Carrie: So, I would say that traditional assessment in education, you know, we have structures of courses, where we acquire content and then test along the way, where learners are sort of frequently engaged in high stakes assessments, sort of cramming for a test, preparing for a test, and maybe those concepts are not explicitly returned to. So, we have very bright learners that are really good at acquiring information. And the question is, what do they really maintain in the end, in the long run; what have they really earned by the time they leave our door step? And so, what we are working on doing, moving forward, is creating an assessment structure that is more formative in nature. And what I mean by that is learners are continuously getting feedback on their performance in order to improve their performance overtime. And the other piece of it is how we are integrating it into our assessment across time. So, its integrated. They're not so much in a focused course. Assessment is across domains, across competencies, so the learners really are trying to make connections and study things in a really cohesive manner. And things are cumulative. So, things will continue to come up. We are not going to have an anatomy course where that material is never resampled, retested. So, the learner is sort of always drawing back from that previous information, in part to support driving learning but also for us to understand what have they really learned overtime.

Steve: You got this—you've mentioned—well you've got this background in neurology. And you're talking about learning. I think I heard you say the word 'cumulative'. That to me, as a student, always sounded harder. I had a class in college, and you got that syllabus and it said "cumulative final exam", everybody sort of panicked a little bit. So, that sounds harder. And

then it also made me think of, with you neurological background, spaced versus massed practice. So, I'm kinda wondering again with your background in neurologic physical therapy, because I think all of us would pick up on spaced versus massed training motor skill. Are you saying that's the same thing in DPT education?

Carrie: So, yes, I am saying—and there is a good parallel to massed and spaced practice, also the concept of interleaving and how you can set shifts between two different tasks and how also if you talk about motor learning literature helps drive on a retention test while someone has acquired a skill. Same thing if you talk about assessment or in the way in which you practice learning. For your cumulative question, yes, it is potentially harder. But I think what we are going to be working through doing is how is some of the concepts maybe you've previously revisited, how are they related to how we bring them up again as it relates to—as a good example, some of those foundational science courses when we are now progressing to more in—the-clinical content? Those foundational courses are very specifically related to the clinical content. It's sort of, how is it interwoven and how is brought back up but in a more meaningful way as these learners progress through the curriculum and have more encounters with patients and how they can draw on some of their experiences. It's an opportunity for us to tap back on that foundational content because it is important. We don't want to lose it. So, it is certainly part of the picture of building that practicing clinician.

Steve: I think, correct me if I'm wrong, I think one of the things I'm hearing you say is you're describing a structure focused on learning. And my next question was going to be: hasn't education always been about that, what's the difference? What I'm hearing you maybe describe is the difference between assessment of learning and assessment of performance. Is that an accurate way to characterize—

Carrie: I would say yes. So, performance is really what you can do at any given time. And if you really want to understand—and it's hard to distinguish the two, yes—if you want to understand what a student retains overtime, you have to sample it differently.

Steve: I think the point your making is really important. When you shift the focus on learning over a longer period of time, there's a couple things that really stuck out to me there. One is yes, that makes sense. You are training to be a professional, not just a class that ends and you never have to come back to. But it also just sounds harder to me. So, how's that going? Have there had to be adjustments or what kinds of things should one think about if they're moving to something like this? It doesn't seem like you would necessarily be able to just keep all of content or all of the assessments the same.

Carrie: So, you definitely cannot keep all of the contents and all of the assessments the same, certainly if you want learners to learn and have a great depth and breadth of learning. You really cannot smash thousands and millions of data points into their head. It's how do you return to those really important, high level conceptual things from different angles, so you're sort of tapping into the processes. It's not necessarily about the acquisition of a whole lot of facts. It's how do we view the patient holistically and problem solving? And how do you come up with a novel answer when you're approached with a novel problem? So, I think it's a bigger thing than simple acquisition of a whole lot of data over time.

Steve: Well, this sounds like a big change. And I am curious, what are the kinds of things that have been done to get ready for this. So, talk a little bit about the faculty development. Talk a little bit about the partnerships with the students when you make a change like this.

Carrie: Yeah, so definitely faculty have been preparing for this new curriculum for some time now. I have had a lot of faculty development on the learning sciences, on writing test questions, on sampling, on learning, on pedagogy, looking at all of these elements that have to comprehensively come together to support even this type of environment, which is more learner focused. And certainly, the partnership with the students has been really important, as well. Much like they are learning through practice right now, we are very much learning through practice. And so that has been very explicit from the beginning, from the advent of this new curriculum, that we are all in partnership together in this new learning environment and that we are learning along the way as well. So first we talked about, when we started out this conversation, this notion of outcomes, and that's really where we started. And so, with the outcomes in mind, that is how our teams, module teams, build teams have been focusing efforts in looking at the outcomes. Then, what do we need to do along the way to progress each and every learner to achieve each one of those mile stones and ultimately, our program outcomes, our program objectives? So, faculty have been working in a very integrative fashion to support the progression of learners to achieve those outcomes.

Steve: You've mentioned integration a couple of times, and what I think I'm hearing you say is the integration of content. So, I am wondering if you can give an example of that. So, I am also wondering, does that mean assessment is also integrated?

Carrie: So, yes, to start off. Assessment is integrated. So, where students may have in the past taken an isolated anatomy exam, neuroscience, or clinical skills course examination, learners

not have assessment events that are completely integrated. So, it includes all of the classes they have participated in, laboratories. And it is integrated across the domains of competence and across competencies. So, learners are required to prepare holistically for an assessment event. And you also asked the question about content integration and I think that is something we are continually discovering the amazing opportunities for content integration. I can give you a specific example that we just recently had in class a couple weeks ago. So historically, we have always done so as a part of an early unit to prepare learners to go out on the early clinical experiences. We have a course—or excuse me—a class session on positioning, turning, and draping. And what we took the opportunity to do was to combine some of those preparatory asynchronous work with informed consent. And so, part of that class, some of preparation, what reviewing, not only a clinical activity that you would do, but also, the purpose and the foundation of informed consent. And when they came to class, there was a lot of very rich discussion on how these two content areas came together to provide very patient-centered, professional, respectful care. Where it may have just been positioning, turning, and draping and sort of, where do we put the person and how do we support them, and it was a much more, I though, patient-centered and holistic approach to a specific content area that was really well integrated across domains of competence.

Steve: That's interesting, and I think that makes total sense to me, especially in two clinical topics, if you will. And particularly with someone who teaches in the areas of professionalism, I love the idea of not teaching the topic of informed consent in isolation, but one in where the learner can really realize the importance of it in practice. So, that's great. I'm going to shift gears a little bit on one of the other things you mentioned. So, you mentioned stakes, low stakes and high stakes, formative and summative assessments, can you talk a little bit about those terms, what they mean, and why there is a need for multiple types of assessment?

Carrie: So, I would say that we use each piece of assessment, formative and summative, differently. But they all provide us with really important information. They provide important information to the learner as they are working toward achieving their outcomes, they provide really important information to the faculty, not only to evaluate their own teaching strategies or where the learners are at so they can adjust to improve learning, but it's also this piece of accountability to society. And are our learners prepared to go out and deliver safe and effective high-quality care to society? So, formative can be used in a variety of ways. We have sort of three tiers of assessment in our curriculum, one that is purely formative to the learner, it does not competence, and that what we do and our faculty is so great at. Every day at class, providing really explicit feedback in where the learner's at, so where the learner can use that to calibrate their own performance. To go back, prepare, and come back for another assessment. And then we do have formative that does contribute to competence over time, but it's sort of lower stakes in that it accumulates in to a bucket. Like that middle tier assessment, it gives us a

chance to check where the learner is, it gives the learner feedback on their performance, but it's not super high stakes. And then we have much less frequent, what we call our assessments of learning, which are our summative assessments, it's our check to make sure the learners have it. There are accountability to the external stakeholders that our learners have what they need to have to go out and deliver not only safe, but high-quality care.

Steve: Well, that makes sense to me. How—so we've started, but we're just a couple weeks in, right. There's been a few assessments. How are the learners doing and how are we partnering with them to build this together?

Carrie: So, I would say that it's going well. We are still working through our new way we manage data and evaluate data. The learners have been very patient with us while we're learning through practice. And we just keep really close communication with them along the way as they are getting feedback on their performance. We tell them how this is an iterative process, we try to explain, to bring to light what they might be seeing as an output of their performance, which is very different from what they've seen in the past, which might be, you know, five course grades. And so, its constant communication with them, it's setting up meetings to look over data, to talk about data. What does it mean? How will it be used? And learners have been really great in providing us feedback. Every time that we have a written assessment, they have a feedback form that they give to use: what was working? What didn't work? Were you prepared for that examination? And that has really helped us shape our practices and moving forward even into the next assessments. Every assessment we are learning, and learners are a part of that process to helping us learn and shaping it moving forward.

Steve: I think that's so important, that they feel and actually be a part of the process. I think it's actually truer to the definition of formative assessment, that there's more of an equal footing there between the instructor and learner in those cases. It also seems to me to really be one of the ways that we realize professional education and doctoral education as we continue to mature past our other stages in education of physical therapy.

Well, this sounds like a lot of change. So, I think I have to ask the question—and you talked about outcomes, and one of the things that comes up in national conversion all the time is if you look at our traditional metrics: graduation rates, board scores—I think it's reasonable to ask the question, well, why make a change? And so, can you talk a little bit about why something like this—because it sounds like a huge task—so why even take this on?

Carrie: You are definitely right that it is a huge task, but it's one that we as a faculty have decided to do together. So, we decided at the outcome, we had a retreat very early on in renewal about what were our guiding principles, what did we want to see from our graduates, what was very important to us foundationally as a program, and that was paired with, what do we know from the literature, how can we use that and partner all those goals together to leverage our current strengths to, what we believe, to be taking a step forward? So, we do have good historical outcomes. I think we can sit on that and be confident in that we are in a place to take another step forward and try something new because of the historical strengths that we have in our program.

Steve: Now, I want to add a little bit to that. You know, you mentioned our early retreats and actually some of our faculty development sessions. Early on, the focus was: what's the future of physical therapy? And a big part of that was: what are the future needs of society? And I get asked all the time, "Well what does learner-centered even mean with a competency framework?" I think that people see competencies, they understand outcomes based. Physical therapy education has been outcomes based for as long as I have known it. But a competency framework and a learner-centered approach really means it's a little less about us. I mean the faculty and I mean the institutions. And it's more about the needs of society and then how do we get the learner prepared to address those needs, not only through an end point of graduation, but throughout their career? Physical therapy here at WashU: we had a huge jumpstart. I think our faculty and intuition has always been committed to that. And now, we are building a framework to make sure there is a commitment to that, you know, across one's career. By the way, that comes up a lot too: this concept of life-long learning, it's not new. And so, what's the difference--I am not specifically thinking about some of the writings, the stuff from Bill Cutter, Advanderbuild in medicine, some of the presentations from the Education Leadership Partnership through APTA, and the work of Gail Jensen and some of her colleagues. We have of course been interested in life-long learning. How does a competency-based continuum and a learner-centered approach get at that?

Carrie: That's a great question and a really important point. When you have a more learner-centered environment, there is a lot more driven by the learner. So how is the learner self-assessing, identifying holes in their performance, calibrating it with external feedback, developing plans for learning? Because not all of the problems we encounter in the clinical environment—number one you've encountered before—or really require adaptive expertise. So, what we can build routine—expertise, where we just get more proficient at problem solving with routine problems that we encounter in the clinic. But you and I both know that many of the problems that we encounter on behalf of our patients, for our patients, are many times not routine, or that the patient does not exactly fit all of the randomized control trials and we have to come up with novel solutions to new problems. And it really requires individuals and really



navigate through routine and adaptive expertise and learn through practice. So, a lot of the things that learners—when it is more learner-driven—they're really required to identify holes in performance and to figure out ways of how they are going to generate new learning. And what that looks like in one learner looks very different in another learner. So, I might be able to wizz through neuro classes and you might be able to wizz through some other type of classes, right. But, it's all about juggling where I am now, calibrating it with where I need to go, and developing a plan to improve my performance overtime.

Steve: So, Carrie, you've mentioned a couple times now examples of summative assessment, formative assessment, things that are higher stakes and lower stakes, and I think the first thing that comes to my mind is the classroom environment: taking exams, written exams, or performance assessments. But talk a little bit about the clinical environment. You've mentioned how important this structure is to caring for the patient in the clinical environment. What does assessment look like in the clinical environment?

Carrie: So, assessment in clinical environment is also where we are going to be working on an evolution. Where we've historically used the clinical performance instrument, describes domains of performance in the clinical environment. Things like professionalism, examination, evaluation. And we're still going to continue to use that clinical performance instrument for a while, but what we are going to be adding on is this notion of entrustment. So, within entrustable professional activities, sort of the daily work of a clinician, something like performing a history, which you and I know from our very different avenues of practice, performing a history can be very contextual, patient dependent. But the entrustment scale really looks to focus on the level of the learner and how much the clinical instructor, the preceptor, trusts the individual at what level can they perform it, with what level of independence? Do I need to be hands over hands? Can I stand next to you and sort of probe and ask questions and guide from the side? Or is it an actively where I trust you to walk into a patient room, any patient, and as the example, perform a history? And so, we are going to be adding on this notion of entrustment, which I think is a really powerful litmus test and has shown to be highly predictive of future performance. So, this addition of entrustment scales within the clinical environment for each of their learners as they go out to practice their clinical skills in the authentic environment.

Steve: That's great. And you also mentioned there this notion of predicting future performance. I think that really important as well. You know, this idea of entrustment after performance, but also prospective entrustment or making a decision about what you will let someone do next is incredibly important in the clinical environment. I am curious if you have thoughts about how

you start to blend that between what we are doing in the classroom and clinical environment. Will we be doing any entrustment before the learner goes to the clinical environment?

Carrie: Yeah, I definitely think that's something that we hope that we can do. So, for an example of learners going out into their first clinical experience, their first full time clinical experience, so our learners are involved in the clinical environment from the third or fourth week of classes, but it's sort of at an intermittent level. But what are those things, and what type of assessment can we simulate within our classroom environment that give us a notion of pretreatment for them to go out into their clinical experiences? Do we trust them to be safe on that initial full time clinical, as an example. To be safe and effective, cognizant about their stage of development, of course always in mind, but that's always something that we need to talk more about, to learn more about, something we want to do moving forward.

Steve: Carrie, this is great, and we've got a lot of information today about assessment and how we are rolling that out in curriculum renewal. What's next? So, what are you hoping for with this first cohort that's going through renewal? And what's the next step for the faculty and the process?

Carrie: Yeah, I think that we're really, as I mentioned a couple times, we are all learning along the way. And I think that that allowance and that grace between faculty and learner is at the heart of what we are really trying to do at a curricular level. To partner with our learners, with one another as a faculty, to really develop these learners into lifelong learners. And there's no better for us to do that than to set the example of learning through practice. I hope that we work together in our learning environment as a team and that the learners can help us shape what we do moving forward. And I know that in the four, short weeks we've had with these learners, they have already been—their feedback has been integral into the next step that we've taken, and I hope that that continues where we all learn together along this journey.

Steve: Well, I totally agree. And I think the only that I would add is early on, when we made this decision to move forward, we also committed to sharing and learning with the profession. And as you know, we have had a couple of presentations at our national meetings, and those are always approached with a "here's what we're doing, here's how it's going, and help us improve it". And so, it's been wonderful too to have others across the country how have been interested in this and provide feedback along the way as well. And I feel like we're also really moving forward as a profession here, and it's exciting to be one of the ones out in front with it.

Thanks so much for being here. And hopefully we can do this again.

Carrie: Sounds good. Thank you, Steve.

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