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30 Brave Minutes Podcast

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Dr. Richard Gay

Welcome to *30 Brave Minutes*, a podcast of the College of Arts and Sciences at the University of North Carolina at Pembroke. In *30 Brave Minutes*, we'll give you something interesting to think about. I'm Richard Gay, Dean of the College of Arts and Sciences, and with me are Associate Deans Ashley Allen and Joanna Hersey. Today we're being joined by Hillary Sessions, Director of Math in the Department of Math and Computer Science. Now get ready for *30 Brave Minutes!*

Dr. Joanna Hersey

Hillary welcome to the podcast, we're so glad to have you on this afternoon, please go ahead and tell us a little bit about yourself.

Mrs. Hillary Sessions

Thank you for having me, I'm glad to be a part of this. So my name is Hillary Sessions and I'm actually born and raised from Richmond County, just beside Scotland County. I grew up there and went to school at UNCW, and actually became a Brave myself with my Masters Degree. After that, or alongside with my Master's Degree, I worked in K-12 education, in several high schools in North Carolina, and then decided that I wanted to pursue a degree teaching math at the collegiate level. So that brought me to UNC Pembroke.

Dr. Richard Gay

Well, tell us a bit about how you knew that you wanted math to be a part of your career?

Mrs. Hillary Sessions

At UNCW, I kind of floundered around a little bit with my interests and what I wanted to pursue in my college career, and I actually ended up taking a few tests to help me, in the Career Center. So what I found out was that I was really good at math, and so I decided to major in math and minor in chemistry, and after that I thought I might pursue a degree in optometry, but after working for an optometrist all through college, I decided that's not what I wanted to do. My grandmother actually passed away, who lived in Scotland County, and home kind of called me, so I came home, and math

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chose me as teaching. A teaching position opened up at Scotland High School, and I became a Fighting Scot and actually fell in love with education after that. So after the experience I just decided that that was for me.

Dr. Ashley Allen

We are very lucky to have you here with us at UNCP, I consider myself very fortunate to have you working with our students because you are fabulous. Tell us a little bit about the research you're doing right now in terms of teaching math, maybe in connection to your doctorate program.

Mrs. Hillary Sessions

Yes, so I am at the end of my doctoral work, and up to my eyeballs in research with it, I'll be graduating in the spring so I'm really excited about that. My research stems from the interest being the Director of Math here at UNC Pembroke and seeing our students and the needs that they present us with, so I'm very interested in what research designates as developmental math courses, and in no way, shape or form is that a math course that is dulled down in any way, but developmental math courses are math courses that students take to brush off the cobwebs, to get them ready for their first actual college level course.

So we're seeing the effects of Covid, and some gaps that the students may need to fill in their math capabilities, and so these math courses will help students as they pursue their degrees. So for instance, College Algebra, Quantitative Reasoning, some of these courses help students prepare for the first math course within their degree. When you join our cybersecurity program, the first math course is going to be Pre-Calculus, well some students aren't ready for Pre-Calculus, so these courses help better prepare students to enter their programs of choice. So my research interest is what are the key factors in those courses that help students fulfill those skills, and what I found is it's not only teaching the content. So I'm hoping that in my research as well as my K-12 background has influenced this, and I'm learning that we have to know our students, and I pride our department in that, you know, we have small class sizes, and we try to implement some individualized learning, but we need to know our students, we can't only teach math but we have to teach our students organizational skills, study habits, things like that, to help them be successful in their careers, and in their math courses here at Pembroke. So I'm really interested in the research that's behind what makes student's successful in those foundational math courses.

Dr. Joanna Hersey

Could you talk a little bit about what some of the differences are maybe, between those beginning, entry-level math courses, that students take in our General Education

curriculum, and maybe some of the other classes that they also take, such as in the English Department. What are some things that you might see as being different, or specialized about the math that you're over?

Mrs. Hillary Sessions

Yeah, so actually that's an exciting thing to talk about. We've added a new General Education course just this fall, and it's a Quantitative Reasoning course, and that math course was added to help our students who are non-STEM majors have another math track, another math option. And that's another research-based best practice, is making sure that these students have different avenues that suit their major requirements. So for a long time, all students had to take College Algebra, and that is no more, we're really excited to offer this Quantitative Reasoning course, and it's for students within the humanities majors, and it teaches everyday math. It teaches students how to select the best medical plan for their families, it teaches students how to calculate their taxes, it also talks about misleading graphs in the real world that may be displayed on media, and how to differentiate between those and what's actually true. So, Covid statistics are presented in this course, different things like that. A lot of students who take that course, although they're not STEM majors, their next class is usually a statistics class within their content area. So they may take Social Work for statistics and so it helps them build those statistical skills as well. Other STEM major courses would take either a prep for College Algebra or College Algebra course, and we determine what students take based off of a math placement test score.

Dr. Ashley Allen

Earlier you were talking about the different kinds of skills that you would also teach in developmental math courses like study skills and things like that, are you incorporating those into, I guess the developmental math courses we are offering here?

Mrs. Hillary Sessions

Yes, so that's a big push within our curriculum committee meetings that we host with our math department we do have a curriculum committee meeting and we host those about every two weeks, and so we discuss the curriculum, also the ways that we can help our students. So I've presented several research-based strategies in these meetings, such as the study skills, the organization, part of that is even bringing back study guides. We had a lot of professors who just gave midterms, a midterm test, and a final test. So we've really worked on scaffolding the curriculum, that is a research based strategy, helping students, not just handing them a final and letting them guess, but providing them with practice that they turn in, that they get feedback for, and then the study guides also help them.

Dr. Richard Gay

How do you help students who come to your class and say 'I don't like math' or 'math is hard for me, I'm not a math person'? I'm sure we've all encountered folks like that, so how do you address those concerns?

Mrs. Hillary Sessions

The first thing I like to do is, I like to talk to the student and find out a little more about their background, I like to know what their degree is in, and try to make some sort of relationship with them, and make a connection to how math will fit into their pathway. And show them the relevance of math within their particular field, and after we start that conversation, I think I become more approachable to them, and then they're willing to kind of give math a try, I guess. So I think really just getting to know the student and helping them bridge those fears and getting past those a little bit.

Dr. Richard Gay

Yeah I think a lot of it is confidence building, and it sounds like you're addressing that in the curriculum, particularly with the scaffolding approach, that's a good way to build confidence, because you get small successes as you approach the material.

Mrs. Hillary Sessions

And not only confidence but how do we build motivation too, right? So it's that confidence, motivation, and always kind of assessing that. Currently in my online College Algebra courses I am conducting a pre-survey and post-surveys of confidence and motivation, and in one course I'm integrating some online collaborative learning, in one course I'm not, so I'm interested to see, you know, what the difference makes. In an online environment, if I add collaborative opportunities and assignments, do they appreciate, do students appreciate that? Does it help them foster community better in those online spaces? Does it build their confidence? How does it motivate them more? Or not, and so I think that that confidence and motivation are two pieces that we have to consider.

Dr. Richard Gay

Can you tell us how the software product Aleks helps with this?

Mrs. Hillary Sessions

Yeah, sure, so we brought Aleks into our math faculty probably four years ago. So Aleks is an adaptive learning software, where students, upon taking a class, take a pre-test, if you will. So this is a test that students get to show us, as instructors, what they bring with them, so kind of lay it out on the table, here's what I remember from high

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school, because most of these students taking these courses, they're coming from high school to the university. We see where they have strengths and they actually get credit for what they already know, so if they show on this pretest that they know stuff in chapter 5, which might be geometry, they don't have to do that homework. So it lets students actually focus on the areas that they need to learn more, that they need to master that they need more attention to. So it's nice, it's an individualized plan, as you can see, it helps students really look at where they need to strengthen their foundational skills in order to move through the math curriculum itself.

We have a lot of conversations about that data, in our curriculum committee meetings, so we look at every unit, we see, in this module students did well here, here and here, these are the places that we really need to focus our lectures on. So it helps us know that, if 80% of our students got 100% on these homework modules, we don't need to lecture on those. Students are able to grapple and successfully complete those modules on their own, but these lower few, that's where we need to spend time lecturing and pulling students aside for small group learning, things like that. So Aleks is a great system to help us individualize student learning. make small groups, and kind of shift the way classrooms look. I recall as a student, coming into a math class, which I took many of, and sitting down in rows, and being quiet the whole time.

As I became a professional educator I taught in high schools, and high schools started having us learn as a group, and collaborate, and do a lot of different think, pair, share activities and things like that. And then, I started teaching at the college level, and none of that was trickling over from high school to college, and so I thought, 'well, if students in K-12 have been taught to appreciate and learn from each other, and build off of each other's prior knowledge and work as a group, and then we get to college and we stop, I don't know that we're meeting our students where they need to be in the way that they've been taught to learn. And so Aleks really helps us do that with the data we receive, if you use it correctly, right? We're still the instructors and we're still teaching the content, but it really helps us form great conversations where it's needed. I love that it helps our classrooms feel more dynamic.

Dr. Richard Gay

It sounds like a tool that helps both the professor and the student at the same time.

Mrs. Hillary Sessions

Absolutely. It has changed the way a lot of people are teaching.

Dr. Ashley Allen

What's been the most surprising thing that's you've found in your research when you're looking at developmental math courses?

Mrs. Hillary Sessions

One of the most surprising things in my research is the different things that larger institutions are doing to support it, so it's not only adding a different track, it's all the different ways that you could develop that track. So we could look in the future at making a co-requisite course, where students take College Algebra along side with Pre-Calculus, and see how that works, and that works really well because students don't "get behind" or get off track, they're getting that foundational help while taking their first college level class at the same time, and research shows great results off of that. But you have to consider, that a student signing up for six credit hours of math or seven credit hours of math a semester. So you really have to have the institution itself on board for that kind of opportunity. So that was surprising that a lot of institutions have adopted that co-requisite model.

The other thing that I find to be surprising in my research is the lack of undergraduate professor PD. When you come to a university, a lot of people just go into their classroom and do what they want to do, and I find that a lot of people find a way that works for them and they stick with it. But we don't have a lot of professional development, and when I say professional development, I'm talking about these conversations we're having in our curriculum meetings. How do we make the classroom more dynamic, more collaborative, more, there's a big gap there. We don't have a lot of professional development, and then get really specific into the content areas, professional development in undergraduate math teaching, right? I think that's a big gap, so we're kind of leaving professors up to their own means, and a lot of times we have to go and find these different ways. And you know, tailoring a class to be individualized is a lot of work on the professor. So I'm really proud of our department for being willing to change and shake things up, that's not an easy task to try, and we have had a lot of people buy into this and actually keep it up, so we're excited about people being willing to be innovated.

Dr. Richard Gay

I would say that we've noticed that spark in the Dean's office as well, because I think when people are really engaged and are really challenging the students, I think it enriches the whole campus, so I think the new curriculum that you're developing, it's going to have, and is already having, a wide reach on campus and I think that's something to keep in mind too, it's not just what's happening in the math department,

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it's what's happening at the university, and you're making a great contribution, so thank you for that!

Mrs. Hillary Sessions

Thanks, it takes a lot of work, it takes a village for sure.

Chancellor Cummings

This is Chancellor Robin Cummings and I want to thank you for listening to 30 Brave Minutes. Our faculty and students provide expertise, energy, and passion driving our region forward. Our commitment to southeastern North Carolina has never been stronger through our teaching, our research, and our community outreach. I want to encourage you to consider making a tax-deductible contribution to the College of Arts and Sciences at the University of North Carolina at Pembroke. With your help, we will continue our impact for generations to come. You can donate online at www.uncp.edu/give. Thanks again for listening. Now back to more 30 Brave Minutes.

Dr. Joanna Hersey

One of the things that I think is really neat about the conversation too that you're bringing up is, that we're collaborating farther away from just the Pembroke campus. You're involved in something called Math Pathways, which is a statewide effort to coordinate and discuss math curriculum. You're talking about getting together and learning from what other campuses are trying, and I think it's really neat that our faculty here in Pembroke are actually connected through this wonderful web to the profession, across our system, and even throughout the region, and so we're really working on fine-tuning and staying current with everything that people are doing across the region, I think that's really cool.

Mrs. Hillary Sessions

Yeah, I think that it's really awesome and it's important to learn from each other and then bring it back to your own university and see how it fits there. Because we are unique, you know, we're small, we have different demographics here, and I think what works for other institutions it's important to consider it and how it might fit here, or how it might not, so I think that's special, it really is.

Dr. Ashley Allen

So as a math educator, in pretty much every sense of the word, like having you as a Director of Math here at UNCP is something that I don't think all of our different departments have, right? So you studied education, you studied how to teach math, and that's not necessarily something you'll find across every area in Arts and Sciences.

So what is a recommendation you would give to a faculty member, a Chair, in another discipline, who wants to just improve their teaching from a developmental capacity, those entry level courses that we might be talking about. What's something that they can do to just be better at engaging our students?

Mrs. Hillary Sessions

Yeah, I mean I really think it does take knowing your students, I think that entry surveys, exit surveys, knowing what the students need and what they want, because if you ask, they'll tell you. So the first week of class I have a PowerPoint presentation and it just says, how do you really feel? And it's anonymous, and it lets them tell me a little about themselves and just kind of do a pulse check on the class itself. But I would say, open up the conversation, hear from the students, what they want, what they need. What I've heard is that they would like SI sessions to be back, they would like different opportunities for study halls, for tutorial services, that's what I'm hearing. So now we know what they would like to see and it lets me open up conversations with Derek Oxendine at the University College, to see, 'hey can we bring an SI session back,' what would that look like logistically for these developmental courses, these entry level courses, and how to best support our students.

We've added a math tutoring support specialist, and that's a grant-funded position, and again that was from hearing what we need from these courses and it's great they have drop-in hours, online hours, face to face hours, but I would suggest that they move forward, and read the research. I know I'm talking specific to developmental math, but developmental education at the collegiate level is a huge hot topic right now. Again, I mentioned this flood from Covid, and how do we fill in these gaps, and we're all kind of feeling this out, but that shouldn't enable someone to pursue their career.

I think that we really need to pursue things and these different elements that you can add to your courses, teaching study habits, I think it's all about extending grace and upholding rigor. We need to know how not to dull anything down, but really to meet students where they're at and help them press through. I met with a student this morning and I just said, 'how you define success?' and I think we need to know, is success just passing, is success making an A so I can be qualified for vet school, what is success to this student, and try to help that. So I would encourage them to definitely survey their students, get to know what they want, hear their voices, and then meet with their faculty regularly. That has been just huge for our math faculty, it's brought up different conversations, I know people's family likes, people's interests, and it's been wonderful, it's been great, and you just see, you see it in our faculty, we really do enjoy being together.

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Dr. Ashley Allen

I was just thinking maybe in the show notes we can include the links to maybe your favorite research articles, developmental education at the collegiate level.

Mrs. Hillary Sessions

Studies, yeah. Yeah, and I think you have to consider our students at Pembroke, who we have coming to us and in this cohort, and speaking in a math sense, I know who we have because we implemented a placement test, and this placement test has shown me what students are bringing, and that we needed a new gen ed course to help students, so we developed it based off of the need. It used to be that students were placed solely off of their intended major. So if you intended to be a nurse, but you weren't that great at math, you still had to take Pre-Cal as your first math course. Well then we had students failing Pre-Calculus and then they were no longer qualified to be in nursing school. And we don't want that to be a barrier, we want to break down those barriers, and so instead of this student being placed into Pre-Cal, they needed to be placed into a College Algebra or foundational algebra course first, so that when they got to Pre-Cal they could ace it and it would no longer prevent them from pursuing what they're passionate about.

So I think that breaking down those barriers, look at your course data and see if there is a course that you have within your department that is a barrier course and how to improve it. I think some people get in the mindset of, 'oh, this is going to weed students out' but it shouldn't be about weeding students out in my opinion, it should be about what's a different route to help a different cohort of student be successful.

Dr. Richard Gay

I think that's an excellent response there, I love this idea of meeting students where they're at, helping them along the way, and helping them achieve their goal. I think that's an element that we all need to be aware of and I think providing access to the courses that help them be successful, it goes back to your earlier comments about the scaffolding of the curriculum in such a way that students build skills that become more and more complex, so that they can address more sophisticated concepts by the end, and so I think it's great that faculty are willing to meet students where they're at.

There's really something to say about education, we talk about it being transformative and I think when we do meet our students where they're at and encourage them along the way that we can really be transformative in our careers and that's one of the things that makes working at UNCP rewarding for so many of us.

Mrs. Hillary Sessions

Absolutely.

Dr. Joanna Hersey

One of the reasons we are talking to you today Hillary is we wanted to celebrate Pi Day. This episode will release in March 2024, and that is the Pi month, so will you go ahead and tell us about, what is that, what is Pi Day?

Mrs. Hillary Sessions

Ah, so Pi Day is when we eat lots of pies, and everybody bakes their special pies...I'm just kidding. Pi is a number, right? It's this awesome, never-ending number and it helps us as mathematicians solve a lot of different problems, specifically and importantly in geometry, in the geometry world. It's dated back to the ancient Greeks who discovered this and the need for it, and so on Pi Day at UNC Pembroke we celebrate, right? We celebrate all the contributions it's allowed mathematicians to make, and we are hosting Pi Day here in the Quad this year. We are inviting some middle schools to come, we will have stations set up where students actually discover Pi and the number and several digits to it, we have some competitions such as who can memorize the most digits in a short amount of time, just for fun. But it's just really engaging students in math, we'll also have some other math stations outside of Pi, just to engage students in what the math world could look like for them, and how math is every day, so we really want to bring that relevance to students lives about Pi Day, and this is new for me, I joined this crew right before Covid, so I have not experienced Pi Day myself but I'm super excited, it's going to have a lot of game-based fun on the Pi discovery and how we can apply Pi to different types of problems.

Dr. Ashley Allen

That's awesome. Let's myth bust some math myths, what do you notice the students in your class thinking about math as opposed to what they learn about in the classroom?

Mrs. Hillary Sessions

Well, I think students think math is really hard and complex, and they can't do it, and it's not relevant, when are they ever going to use this? And that's a myth, right? It's everywhere. We were talking about this before we started recording about how math is in every detail, I feel like, of a lot of people's lives. It's when you go to the grocery store, it's watching a baseball game and understanding statistics, it's looking at your phone, we talked about your likes on Facebook or Instagram and the percentages, and what makes it increase and decrease, and we talked earlier about how to select vision

plans and lots of things and that's all math-based things, these are all logical decisions, but what underlies that logic is math, right? So I think a big myth is that math is hard and it has to be hard to understand, and it doesn't, I think it takes one really great experience to overcome that fear.

At the same time I do want to highlight that math anxiety is real, it is huge, statistical anxiety is real, we have to help students get through that, and it could have stemmed from a very early age, but that's a big myth that I see. You have to be good at math to pursue engineering, to be brilliant at math to pursue a science degree, you don't, you don't, you just have to know to approach your professors, to seek help, and we can get through the math courses if they're hard for you and help you understand from those skills but you don't have to be a math know-it-all to pursue those STEM degrees.

Dr. Joanna Hersey

I think part of that might have come in the old focus that we used to have with so much weight on the SAT scores, and that really centered reading and math for many of us that grew up under that system, and that's changing, now moving forward, Covid helped that change, holding those two subjects up on a pedestal above the others is I think, something that many of us feel we should shift, and I hear you in this discussion today, talking about that, really moving students back to really seeing everything as connections. You mentioned social, and really using those things to get the students back on track because as you say, it doesn't really matter where they came in at, they can find a course for them that takes them to that nursing major or as you said, engineering, some of these other subjects, and so I think maybe it's nice that the focus on the SAT has lessened, so that we can level everything back out.

Mrs. Hillary Sessions

Absolutely, absolutely, and I think that's what this placement test does help us uncover, really helps us focus on the math that students remember, and I always talk to students as 'you just really need a semester to brush off these cobwebs, I know as a K-12 educator, as a high school math teacher, you've seen this content before, it's not new to you, let's just take a semester to re-build those skills and make sure you're very very confident going into your first college level class that helps you pursue your true degree here.' So yeah, that's a myth, math doesn't have to be all hard, and it's not always about numbers, there is relevance to math, and so I think that that's a big misconception. When am I ever going to use the Pythagorean theorem or the quadratic formula? I also think, I'm a huge advocate in, trying to not make students memorize these formulas, but actually apply them, so I am, I came in and as a first year teaching college math, we had people limiting the calculator usage, or things like that, and you know, what's an engineer in the field going to do? They're going to take their phone out

and do a calculation, they're going to google the formula that they need to solve these things, right? We want to know can you apply them. So I think that rote memorization needs to be eliminated and let students show us what you got, so yeah, have a sheet with a few formulas on it, you know, can you apply it, can you actually fulfill the task you're being asked to do?

Dr. Richard Gay

It's about problem solving in many ways.

Mrs. Hillary Sessions

Right, it's all about problem solving and it's wonderful. I'm teaching a graduate math course on curriculum development and problem solving and it's wonderful, it's great, I love it.

Dr. Joanna Hersey

What are some of the other classes that you love teaching?

Mrs. Hillary Sessions

Well I'm very passionate about these entry level math courses and so that's kind of where I, as I develop the schedule, put myself. I've enjoyed teaching the Quantitative Reasoning course for the first time this semester, but I really like teaching the math education courses as well, so teaching math with technology, how to implement technology, how to collect data from your students and use that to help your teaching and your pedagogy skills, building those up. And I really do like teaching the Introduction to Statistics course as well.

Dr. Richard Gay

Thank you so much for joining us today Hillary, I've enjoyed learning more about your research and the fine work you're doing with your colleagues in the math department, so I wanted to say thank you, and I'm really looking forward to Pi Day!

Mrs. Hillary Sessions

Oh yes, thank you for having me!

Dr. Joanna Hersey

Thank you!

Dr. Ashley Allen

Thank you!

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