Dan Seed: Hello and welcome to Big Ideas, a podcast from Texas State University in San Marcos, Texas. I'm your host Dan Seed and I'm a lecturer in the School of Journalism and Mass Communication here. Today, we're joined by Dr. Shannon Weigum, an Associate Professor from the Biology Department and MSEC, Materials Science, Engineering, and Commercialization. She's here today to talk about innovation and entrepreneurship. Dr. Weigum, thanks for joining us.

Dr. Shannon W.: Thank you for having me.

Dan Seed: Let's begin with a brief introduction of who you are. What's your background, both in academia and industry?

Dr. Shannon W.: My background, I have a PhD in biochemistry and did a postdoc in bioengineering. I joined the faculty here at Texas State in 2011, just before the MSEC Program launched. I was brought in because of my interdisciplinary research background covering cell molecular biology, biochemistry and bioengineering that really supports the more bio materials components of the MSEC Program.

Dan Seed: Everything that I was never anything good at in school is your expertise, so you can teach me along with our audience here. What are your research interests? Let's start there.

Dr. Shannon W.: My research is focused on developing new ways to detect and diagnose disease. We work on different engineering platforms called microfluidics and paper-based microfluidics that are relatively low-cost and can be used in remote locations or developing countries. We also look at different nanoparticle-based systems for enhancing amplification of those disease detection capabilities and even possible therapeutic applications of those nanoparticle-based systems.

Dan Seed: Pretty fascinating. Anything that you're working on now that you'd like to discuss?

Dr. Shannon W.: We do have a project that is funded right now through NASA and a company that I'm working with in Austin called Nanomix. And it is to develop a general microbial detection system using fluorescent aptamer beacons, which are short segments of DNA that can be folded. We place different molecules that either fluoresce or take away that fluorescence, which is essentially just light in the presence of those pathogens or of those targets.

Dan Seed: We're here to talk about this idea of innovation and entrepreneurship, an initiative for innovation and entrepreneurship. How does what you do fit into that? I would imagine with the medical end of that, there's always room for innovation obviously and entrepreneurship, but how exactly does that fit in?

Dr. Shannon W.: Within my field, I have always looked at research and been driven by how can this be used and applied to improve society, life in general and benefit people. Often in academia what we find is we do fantastic research, we publish it, and then it doesn't really make an impact to anybody outside of your own academic lab. Really the MSEC and the commercialization component of that is one of the things that drew me to Texas State, simply because it goes that next step and says we want to take those interesting innovations that are happening through research and really ensure that they do get out into the world and can be utilized by companies to benefit people.

Dan Seed: Let's talk about innovation. We hear that word thrown around a lot across disciplines, across business now. I'd like to know from you and to maybe explain to our audience what does innovation mean to you, especially in the context of what you're doing?

Dr. Shannon W.: Really, I will start by saying innovation has become a buzzword that everybody uses often incorrectly and often innovation and entrepreneurship get used interchangeably. And yet they're very distinct processes in themselves, but they are closely tied together and linked.

Dr. Shannon W.: Innovation comes from new ideas and developing new devices, processes or scenarios where you can improve upon existing processes. It allows us to be able to do something that we weren't able to do before. That's an innovation. And really it is entrepreneurship that is the act of taking those ideas, those innovations, those inventions and turning them into new businesses and new business concepts and really executing upon that for the benefit of our local and global societies.

Dan Seed: That's a great segue into why you're here, to discuss your big idea, which is a Center for Innovation and Entrepreneurship here at Texas State. What exactly is it? What's the mission and vision of this?

Dr. Shannon W.: This actually started out of a year that I served as the presidential fellow in 2018. During that year, what I did is looked at our existing innovation and entrepreneurial ecosystem and identified what are the things that we're doing well and what do we need to be doing more of? And one of the things that we learned is that we've got a lot of existing programs that are doing great things, but there's a limited connection between them and communication both internally across the university, across different departments and divisions, and also externally.

Dr. Shannon W.: So really the evolution of this big idea came out of that project and looking at how do we make those connections in order to be able to grow and sustain a true culture of innovation and entrepreneurship across our university that is interdisciplinary, cuts across science, engineering, business. To humanities and social sciences, to art, and really instilling and providing different opportunities for students to be able to develop entrepreneurial skills whether or not they ultimately become an entrepreneur. But it's about that skillset.

Dr. Shannon W.: And so the center and this big idea really are focused on instilling that mindset and giving students the ability to learn how to take risk and do some creative problem solving. And risk is a big element to that. Within an academic institution, unless you have a center that can do things on a co-curricular basis, risk is very difficult for students to take inside of a classroom and inside of a traditional curriculum. They have to be able to learn how to manage an end, accept and tolerate, and risk if they're going to be successful. I would argue in an entrepreneurial venture or even in any job or in any career venture that they are pursuing.

Dr. Shannon W.: And so having a center really truly provides and connects all of those things across curriculum, co-curricular activities, resources, elements within mentorship networks in order to be able to give students as well as faculty and community members, the opportunities to be able to gain some of those skills.

Dan Seed: How exactly would the center function? How would it be set up? How would it all work?

Dr. Shannon W.: There's both virtual and physical elements to this center. In terms of the virtual elements, that is the communication, the connection and the coordination components and pieces. But there are also physical elements, one of which is what we're calling an IDEA lab. IDEA standing for innovation, discovery enterprise and acceleration. It would be a physical space where students, faculty and the community could actually engage with each other in order to be able to participate in training workshops, bootcamps, seminars, seeking advice from industry experts. Sometimes what we call here at the university, innovators or entrepreneurs in residence. We have set up what we are expecting to be "a genius bar" for open office hours with those people where students and even community members can come and engage with them and ask questions and vet some of their ideas.

Dr. Shannon W.: It's also expected this IDEA lab to be somewhat of a very flexible, creative coworking space where again, people from across the university, not necessarily located in any one department. It's going to be very interdisciplinary and not embedded with any specific department. That is one of the necessary elements and structures of the center, is to really have that cross-disciplinary involvement that cuts across every one of our colleges at the university.

Dr. Shannon W.: And other elements within the center really be adding some structured mentoring network, which again would be able to provide outside external expertise for students and for faculty who are looking to pursue an entrepreneurial venture. We've also looked at developing a digital credentialing system that would be able to help document the specific skillsets that students acquire along the way, that essentially complements their traditional academic transcript, but provides a more rigorous example to potential employers or to potential investors of what their background and what their acquired skillsets really truly are.

Dr. Shannon W.: We've also, in addition, initiated a new living learning community called Bobcat Start-Up, that will focus on incoming freshmen and provide series over the course of the year events where they can interact with existing entrepreneurs, be exposed to some of the necessary skills to pursue an idea and even just work together to even make those happen.

Dan Seed: Now a few times you've mentioned the importance of cross-discipline working here. Why is that so important in an environment like this?

Dr. Shannon W.: Despite the fact that I come from a science and engineering background, not all innovations come out of or are technical in nature. And not all entrepreneurial ventures are based upon innovations. And so you have so many unique things that come out of the social sciences, the humanities, art and that can truly be important, entrepreneurial and even innovative ventures in themselves. So it's important not to just have science and engineering and business together in this venture. I guess a new venture of our Center for Innovation and Entrepreneurship if you can say, but bringing in those other elements. And so it's really that intersection where you have different ideas and that diversity of ideas and diversity of thought and diversity of backgrounds, that really bring more uniqueness and more development into those ideas.

Dan Seed: And you've also talked about a skillset, that students develop a skillset here. That's the idea. What are the skills that this will focus on that maybe they're lacking or not getting in the traditional classroom?

Dr. Shannon W.: There are tangible practical skills and there's also a mindset that we are trying to ensure students are exposed to and are able to develop. And those skillsets, a lot of that is just creative problem solving. How do you take a problem, break it down, figure out solutions that haven't been thought of before. So it's about thinking creatively. It's also about identifying opportunities. Is there any opportunity or market for this particular innovation device? Or is there a need out there? Is there a market that's not currently being solved? And that also comes into a little element of the risk taking. Outside of your traditional academic settings, people have to be comfortable with risk. And in a classroom, students are afraid of taking a risk where they're going to get a bad grade.

Dr. Shannon W.: And so it's in co-curricular activities that risk becomes a training tool that they're able to experience real-world problems and try to solve them and recognize that it may not work, but it's going through that process and having that experience that they gain the insight and the ability to be able to do that again and again and again, which is really truly what entrepreneurs ultimately do.

Dan Seed: When I was in school, we were trained to be journalists. You're going to go work at a newspaper, a radio station, a television station. It was never mentioned you can go start your own thing. It was more so you're going to ride somebody's coattails and get your job and work your way up. How has the dynamic changed, I suppose, in society, education to where now we need to... And we do this now currently in our curriculum, in the school of journalism. Really focus on entrepreneurship and creating your own content and products. But where has that shift come from and why is that so important now?

Dr. Shannon W.: 20 years ago, entrepreneurship as a career was not available. Why is it changing? It's the nature of our economy. Everything that is not thought driven and idea driven and creative, can be automated by a robot and machinery. So it really truly is whether or not you start your own company or whether you are within an existing industry. It is thinking creatively and entrepreneurially that is going to be able to help anybody succeed in their career and in any business setting.

Dan Seed: It's a fantastic skillset. I mean, it's one that I wish, looking back on it, I was in college in early 2000s. And so when you're talking 20 years, it's right about on that course where we were still kind of... I don't know. It hasn't permeated our culture yet, I wish we had had that. I wish we had something like this to create that spirit, to create that understanding of creative thinking and it's okay to do this and it's okay and you need to take that step forward to sometimes make something happen. The old saying, "You can't make an omelet without cracking some eggs." Now we're going to be able to do that here on campus with students. It's a fascinating initiative that you have.

Dan Seed: You've brought this up a few times, this idea at the center that you're going to bring in outside people, outside experts to come in, but all ready you're working toward creating that connection with the community. Could you discuss that a little bit about what happened in the fall?

Dr. Shannon W.: Of course. One of the important elements of the center is being able to connect into the local and larger industry communities. That is to the benefit of our economic development, but also to the benefit of our students and the experiences that they get by networking and hearing things from people that have all ready been highly successful in various fields.

Dr. Shannon W.: One of the events that we sponsored back in the fall was Women Entrepreneurship Week. This has been an effort... It's been going on for about four years at Texas State. It's been driven through service learning and supported by a number of different departments and colleges here at Texas State. And this year what we did is we had four days of events. Each one was targeting a different population. We had a panel of industry experts that were able to really give some insights into their fields, their career paths. That was a really wonderful experience.

Dr. Shannon W.: We had several other events. Another was a quick pitch competition that was sponsored by the greater San Marcos partnership, where both students and people from the community were able to come in and in 90 seconds convey and pitch their idea. It was a great event. We had a lot of really wonderful turnout. Both men and women were involved and participating, but participating in those types of events helps both students and helps anybody get more comfortable with being able to talk and convey their ideas. And one of the hardest things that you can ever possibly do is boil a very complicated idea down to 90 seconds. So kudos to them for being able to do that and the winners of those competitions.

Dr. Shannon W.: And on the final day of Women Entrepreneurship Week, we had a series of panelists that brought in women from Austin to San Antonio to San Marcus and Wimberley, and they were able to, in a very nice intimate setting, talk with students about their experiences, things that they had been through, how they got to where they are today. We had a focus on food entrepreneurship, people developing new food products and had one of the winners of one of the HEB competitions and she brought some samples, so that was always nice.

Dr. Shannon W.: But women entrepreneurship, it's not just about women. It's really supporting those entrepreneurial efforts and those entrepreneurial ventures, then enable and connect up our students on campus into the community and even also benefit community members. Because we also want the center to be something that other people, alumni and the community that brings them to campus and brings them back and serves as an engagement point for them, not only for the benefit of our students but for their benefit as well. If a student graduates and five years, 10 years later is interested in then starting their own company, the center will be a place to provide some of that skillset, that resource and training that they may need.

Dan Seed: Fascinating, interesting. Certainly an initiative that we need, one that surely is going to have a whole lot of involvement and it sounds like something that our students are seriously going to benefit from in the community and society at large, which of course is the whole goal of this situation. Dr. Shannon Weigum, thank you so much for joining us today.

Dr. Shannon W.: Thank you for having me.

Dan Seed: Thank you all for listening. We'll have our next podcast coming out soon, and thank you for joining us on Texas State's Big Ideas.

Speaker 3: Big Ideas is the presentation of Texas State University. Subscribe to experience more innovative thought-provoking content. If you like what you hear, consider leaving us a starred review, five if possible. The views expressed during this program are those of the individual participants and do not necessarily represent those of the university. Big Ideas is hosted by Daniel Seed, produced by Jayme Blaschke, with technical assistance provided by Manuel Garcia. Special thanks goes out to Dan Schumacher.