Laura Bostick-2021-03-31

Gavin Kelly 00:02
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Tonya Oaks Smith 00:15
Hey y'all! This is Tonya Oaks Smith with the University Communications at Louisiana Tech University and this is our podcast, Beyond 1894. I am here today with Dr. Laura Bostick, who is an assistant professor and Associate Director of our UTeach Tech program. It's a teacher preparation program where STEM majors can get two careers with one degree and we're going to start off by talking to Dr. Bostick about exactly what is UTeach Tech.

Laura Bostick 00:34
So, the country is severely lacking in STEM teachers and it has been for years and years. About 20 years ago, UTeach Austin came up with a program to get more STEM teachers, and their idea was, you know, “Who's gonna want to teach STEM”? Well, how about STEM majors because they already have an interest in STEM, clearly, and are good at it, so what if we could get STEM majors to also get certified to teach? So, they came up with a program and then they started sharing that model across the country and now around 41 different universities have that model. So, Louisiana Tech no longer has a major in secondary math, or biology, or chemistry or physics, we just have the UTeach Tech Program. So STEM majors take our classes, our education classes, and then when they graduate they have both their STEM degree and are certified to teach. So they can go into grad school, they can go into the industry, or they can go straight into teaching.

Tonya Oaks Smith
Now, STEM stands for science…?

Laura Bostick
… technology, engineering and mathematics.

Tonya Oaks Smith 01:58
And, why would, this might sound like a really simple question, but why would someone choose to teach STEM subjects?

Laura Bostick 02:09
Well, a lot of STEM majors don't know that they want to. And so, we start out with 2 one-hour classes as our beginning and just say, “Try teaching”. And a lot of them when they come over and try, they decide that they like it. We get into classrooms in the very first class, so you get field experience from the very beginning because we want you to be working with kids and decide whether that's something you like. And, there's just also some people who, they're great at math and they're great at science, but

they're also more people persons, and so the idea of being in a lab somewhere or crunching numbers, you know, isn't really what they want to do. They want to use their talent, but they want to be interacting with people more, and that's a great, a great job for them. And I also tell them, you know, you may work in the industry for a while and then decide later you want to teach. Some people, when they have children, decide that they want that same schedule, you know, where they can pick their kids up from school and have summers off. So, there's a lot of reasons and I just try to express that there's not many reasons not to do it, you know, it gives you more options.

Tonya Oaks Smith 03:29
So, you mentioned changing careers midstream. Tell us about your former career, because you weren't always in higher education or a professor.

Laura Bostick 03:40
No. No, I was a STEM major who never considered teaching. So I got my biomedical engineering degree from Texas A&M and then immediately went to work at Johnson Space Center in Houston. And I was a biomedical engineer at NASA for almost 18 years. And I had no teaching experience when I did that. I started out working in mission control for shuttle flights. The biomedical engineers were the, they call “the backroom support”, for the flight surgeons in the Mission Control Center. And then I moved over to a group that built medical and life sciences, experimental hardware for the shuttle, and then later the Russian Space Station Mir, and the International Space Station. And I did that for quite a while and then moved to another group that worked with spacewalks, basically.

Tonya Oaks Smith 04:46
So you were in biomedical engineering pretty much from the get-go?

Laura Bostick
Yes, yes.

Tonya Oaks Smith
Because it's, it's a field that's not very old, I mean in the big scheme of things, right?

Laura Bostick 04:57
No, no. And in fact, people ask me how I, you know, how I got a job at NASA and I have to admit that it was because it was my only offer. So, I thought that I'd be working for a medical device company, that's kind of what I had in my mind that a biomedical engineer did. And I got a couple of interviews on campus and then NASA was my offer. And I wasn't sad about it, but it certainly wasn't anything that I thought I would be doing. And so yeah.

Tonya Oaks Smith 05:27
Well that's amazing because Louisiana Tech has so many ties to NASA and we keep finding more and this is one of the ones that's just really interesting to me. But you, something happened in your life that caused your path to change...

Laura Bostick
Right.

Tonya Oaks Smith
So tell me about that a little bit.

Laura Bostick 05:45
So, I guess I'd been at NASA for maybe 11 or 12 years, and my daughter was born. And she was born completely blind. And so, I started early-on learning about that because, at two months old, she started their early steps program and so, you know, by the time she was three months old, she had therapists coming to the house, you know, she had an occupational therapist, and she had a physical therapist, and she had a vision teacher, and she had what they call an orientation and mobility specialist, that later would teach cane travel. And so I was just kind of inundated with all these things that she was going to need that I didn't know anything about. And then when a child turns three, they start in the school district, and the school district takes over their care. And so I realized how much I didn't know. And so I did what, what I do, and that is start investigating. So you know, it was this, you know, I was probably on the computer, you know, two hours after I found out she was blind, you know, and I'm googling everything and “What do I do? and “How does she learn how to do this?”. And I had never met a blind person, Linsdey was the first blind person I had ever met. So I had no idea, you know, “Does she have to go to school for the blind? Or will she be able to go to a public school?” And so anyway, I just started investigating all these things and got involved with some, some groups of blind people and parents of blind children. And, my employer at the time would pay for any master's degree that you wanted. And so that seemed like the perfect opportunity for me to get a master's in special education. So, I got my master's in special education. And actually, right before I was about to graduate was the time that the Space Shuttle Program was discontinued. And so, after a while I was laid off and so now I was kind of stuck with this dilemma where I'd been working in aerospace for 18 years, and aerospace wasn't hiring, you know, they were letting go. And I had a Special Education Master's, but I didn't have any experience teaching, and so I really didn't know what I was going to do. And I went to a conference that summer of the National Federation of the Blind, and I met Dr. Ruby Ryles, who started the O&M Program, the Orientational and Mobility Program, here at Louisiana Tech and at the time, she was teaching the teachers of blind students and she was looking to retire in a few years. And so, you know, she asked me if I'd like to come out and see Tech and see the Institute on Blindness and so that same summer I did that and they offered me a job to come out and work with her, and get my certification to teach blind students, and get my doctorate, and so I ended up at Louisiana Tech.

Tonya Oaks Smith 09:15
Wow. Everything happens for a reason, right?

Laura Bostick
It does.

Tonya Oaks Smith
So, so tell me, you really have to become an advocate when you have a child who has special needs, right?

Laura Bostick
Yes.

Tonya Oaks Smith
And that, that seems like it drove your, drove you into a different... We'll start over with that one. Yay, new question. So, so you really have to become an advocate for a child with special needs to ensure that the IEPs are done correctly, to ensure that they get every every accommodation that they need in order to be successful right?

Laura Bostick
Right.

Tonya Oaks Smith
And so, so that has driven you into a career with the PDRIB, which stands for?

Laura Bostick 10:24
The Professional Development and Research Institute on Blindness

Tonya Oaks Smith 10:27
Ok, so that, so that's what started you at Louisiana Tech. Am I right about that?

Laura Bostick 10:29
Yes. Yep.

Tonya Oaks Smith 10:33
Okay. And, and so how did the affiliation with that part of Tech become UTeach Tech?

Laura Bostick 10:43
So yeah that's, that was another kind of leap. So I worked at PDRIB for five years and I finished my doctorate and got my certification to teach blind students. And there was an opening in curriculum instruction and leadership for a special education teacher/instructor and it seemed like a good move to me, for, really the main reason that I wanted to kind of get my message out to more students. So, PDRIB does a fantastic job of training both teachers of blind students, rehabilitation specialists, and cane travel teachers (O&M specialists), but our classes are pretty small, so we'd have maybe 9 or 10 students in a class. And I thought that I wanted to move to where I was reaching every teacher who was going through teacher preparation. A lot of the people who come to Louisiana Tech already have a really good attitude about blindness, that's why they know about Louisiana Tech and come to Louisiana Tech. I think that PDRIB is special in, in the way they train their students because they have, you know, the Director of the center is blind, works with Louisiana Center for the Blind, which is in Ruston. And so they get all kinds of blind mentors and role models and they see what adults who are blind can do. Whereas in a lot of other universities, you know, they have a real heart for the job, but maybe they don't even know blind adults who were employed and successful and live on their own and have kids. So, I think you have to see what's possible to have those expectations. And I kind of wanted to be able to

share that with a wider audience. So I moved over to Curriculum Instruction and Leadership and was a visiting Assistant Professor for a year. And, at the end of that year, the dean of our college, Don Schillenger, came to talk to me about UTeach Tech, because he wanted somebody on the program who had a STEM background but, then also had the the teaching piece of it, and so it just seemed like this amazing fit for me. And, he wanted me to still teach one class a quarter and so I got to keep a special education class. And so, it's like, he just hit everything I was really interested and passionate about I got to do in this job. So that's how that started and that was in 2017.

Tonya Oaks Smith 13:51
Now you talked about the University, Louisiana Tech University, having an affinity for the Institute. They've been here, they've grown together...

Laura Bostick 14:01
Yes.

Tonya Oaks Smith 14:02
One of the opportunities that we had last year was the event at the football game. Tell me about the event at the football game that we had.

Laura Bostick 14:11
Right. So, one thing that people don't think about in teaching blind children is how much people get from sight. Right? People who are sighted depend on sight just, a lot. Almost to the degree that they don't use their other senses because they don't have to. And, when you're teaching blind children, especially if they were born blind, if it's a congenital condition, they have no reference point for so many things. Like colors, for instance, or sizes like, “How big is a lion?”. You know, you read in books about lions and maybe somebody hands you a stuffed lion, you know, a child and says: This is a lion. Okay, well what they're telling that child is that a lion is, you know, about the size of a puppy, and it's fuzzy, and, you know, it has no distinguishable smell, and it doesn't have sharp claws, you know. So, they're thinking that they're giving them this concept but it's not an accurate concept. So anytime a student can, can touch the real thing, or experience the real thing, then they get a better concept. And so, we started talking with athletics about, “Hey, is there a way that we could get a group of blind students to come out to the football field? And just feel a football, you know, feel the pads that football players wear, and the helmet, and walk the length of a field. So when, when somebody says, you know, “They made the first down”, or they, you know, “They ran 12 yards”, they have a concept of what that is. So, we came out here, and athletics was wonderful. They set up all kinds of people. They had one of the trainers who would let them use some of the equipment, they had some of the guys who work with equipment, letting them touch everything and put on helmets. And explaining, you know, why, why they wore the things they did. They had somebody who worked with them, like kind of the physical therapy part, you know, let them feel the ice bath, and let them feel the massage table and get on and, you know, feel what a little massage was like. It was cute, everybody, you know, walked the length of the field and then we told, we were telling them about the field goal, you know, the polls, and they wanted to see how high it was. So you had all these little kids with their canes stuck straight up in the air trying, touching, you know to see how high it was. And then a group of them wanted to walk the stands. So they wanted to walk from the bottom to the very top of the stands to see how big that was. And it was

just so fun. And they learned so much. And then they were just kids. Then they were like rolling down hills, you know, and running and acting like they were catching balls. And it's funny, because some of the adults that came to help out were blind and they said, “I didn't know this, I didn't know what this felt like”, you know. Or, how big this was and that kind of thing. So it was a great experience. And we called it the “Touchdown Touch Tour”.

Tonya Oaks Smith 17:48
I think that may have been the first time I met you face to face in a meeting was, was talking about how we, how we managed this and how we made it an experience for both the students who were going to participate in it, but also the adults or the people in the athletics department who helped facilitate the event and I know that it changed minds and beliefs for some of those people too. And I think that that's, that's one of the strengths that we have.

Laura Bostick 18:21
Yes. Yeah. And, and, and if anyone from athletics is listening, we're ready to do basketball. Or baseball.

Tonya Oaks Smith 18:31
Well, we talked about your affinity for a STEM education. And you've recently received a new title?

Laura Bostick 18:44
I got an endowed professorship. So, I was thrilled that the Waldrup Family wanted to have an Endowed Professorship in STEM Education. And so, when we started thinking about, you know, what might I want to do with, with Endowed Professor Funds, I immediately started thinking about the STEM part, the STEM education. Because, just like I tried to use my special education classes to kind of spread a belief and an attitude about disability and expectations to students and teacher prep, I also want teachers who are going to be STEM teachers to understand what they can do to help students in their class. Because STEM is one subject, or several subjects actually, that it's difficult for teachers to know how to teach that to somebody who's blind or has limited mobility. You know, when you think of your standard chemistry lab, you know, all the things you do, you know, with test tubes and titrations, and you know weights and measures and all these kinds of things, it's hard for them to know what can happen. But I, through my affiliation with blindness groups, had met Dr. Carrie Sub Paulo and he had started a company called “Independent Science”. And Carrie himself is blind and is a PhD chemist. And so he started a company to make accessible hardware for STEM. So basically they use just the same hardware that anyone would use, the LabQuest, but they make it talk. So they have, you know, if you get this equipment, then you can get all the different sensors, you know, the temperature sensor, the voltage sensor, the drop counter, you know, all these things that speak. So the blind student, or the student who can't write, or the student who, you know, has limited mobility, doesn't have to depend on somebody else to always tell them what's happening. They can be an active participant. And so that was kind of my first thought of, “Okay, if I could get some of that hardware and expose our UTeach students to it, then they're going to have an idea of what's possible. Like, I don't expect them to be the experts on it. You know, there are special-ed teachers who are going to be helping. But I want them to just go into a class thinking there are ways to adapt, you know, everything. And, I started looking through some of the catalogs about the biology equipment they have and coding equipment they have

that's accessible. And so I could basically, you know, spend thousands of dollars every year and keep adding to this. And then I think, if I could possibly come up with a kind of maybe modules, or curriculum, that kind of incorporates it then maybe it's something that could be used in all UTeach programs and then maybe in all teacher preparation programs. And, just get the point across that you know that students with disabilities can do STEM. And they're underrepresented, just like women are underrepresented in STEM, and minority groups are underrepresented in STEM. So, you know, I think of it the same way, that we have to find ways to make STEM more diverse and this is one of them

Tonya Oaks Smith 22:41
Well one of the things that we've talked a lot about is, is creating opportunities for accessibility in every area of the world, not just in classrooms. But it, it becomes important, because the concept of accessibility is not to dumb things down, for lack of a better way to put it, but to make things work for all the people. So help, help… So the Americans with Disabilities Act is, it impacts every publicly funded school correct?

Laura Bostick
Correct.

Tonya Oaks Smith
Can you explain to our listeners how that impacts how we provide accommodations for students?

Laura Bostick 23:32
Yes, so, with the American Disabilities Act, it basically is saying that all of the classes and programs need to be accessible. Now, when you think about you know every, every class on campus, you know, you're not going to have every teacher on campus who knows what needs to be done. But, most universities have an office of disability services, and through that, a student with a disability can register and explain their accommodations, and the disability services office works with them to get that. Now, in some cases, all they need is for, say, an alternate form of a textbook. So, for instance, a blind child will need, can't read a textbook, can't read handouts. But if they get the electronic file, they have, they can play it, you know, they can you have screen readers on their computer that can read it, they can have what they call a "refreshable braille display" that plugs into their computer where they can actually read it, you know, with their hands. Some students need extra time on tests or a quiet testing location and disability services can provide that. If it's just extra time on a test, especially right now when we have a lot of remote teaching, you know, there's a way in, in our learning management system, Moodle, that you can, just for a single student, you know, change the time allowed on a test. If they need a quiet test location, you know, it's different now that we're all at home but when we come back, the, the testing services can provide that. So, just depending on what they specifically need, they work with them to, to work with the professors and get them what they need so that everything is accessible to them.

Tonya Oaks Smith 25:39
So we've, we've also talked about, because our Office of University Communications, is charged with helping the University achieve accessibility online with our social media, with our website. And this has become an important part of what our office does, is to explain how accessibility can benefit all of us.

Laura Bostick 26:08
Yeah. Yeah, and that's something that I tried to talk to the teachers I teach in my special-ed classes and professors when I get the chance. I think some teachers think when they have students with disabilities in their class, which they will because, you know, the IDEA is a law that specifies that children with disabilities should be taught in the least restrictive environment, which, so the first option for that is the regular classroom they would be in if they didn't have a disability. Now, not all children, that's going to be their least restrictive environment, but for a great majority it is. So even teachers who think, you know, I don't want to be a special-ed teacher, but they're going to have kids with disabilities in their class. And, what I try to tell them is, the things you do to help these students are going to help other students in your class. So for instance, I had a friend who had a child who had been in an Algebra class and then moved to my daughter's Algebra class in high school. And she went home from school that day and she said, “Oh, my gosh, I love being in Lindsay's Algebra class!” And her mom said, “Why?” you know, “What's what's so great about it?” And she said, “The teacher says everything she's doing so as she's writing on the board she's saying these math terms that the student wasn’t that familiar with.” You know if you think of say, a fraction, and if when the teacher’s writing on the board, she's saying, “Okay, so we have a two in the numerator...” and then they draw the line, “... and we have a six in the denominator.”, you know, if you're seeing it and you're hearing it. And, not all students who have vision are visual learners. And even students who are visual learners, we have found that the more ways you can express a concept the easier it's going to be for them to get it. A lot of students with disabilities get manipulatives for things like Math and they really help sighted students who don't have, you know, a great concept. If you have little pieces that kind of like Legos, you can put together, you know, “And this is ¼. And this is 2/4’s, and see how 2/4’s is one half.” That it's in their hands, you know, it gives them this concept. And it's the same even in higher education. The more ways you can explain something, the more people who are going to get it.

Tonya Oaks Smith 28:50
So, we talked a little bit about UTeach Tech. And last year, y'all received a grant that provides an opportunity for students who are interested in becoming computer science educators?

Laura Bostick 29:09
Right, so, we won a 1.2 million dollar NSF Robert Noyce Scholarship Grant. And the area that we wrote our proposal for is computer science education. Everybody talks about how many jobs there are coming up in computer science fields, but in Louisiana only 16% of high schools are teaching a computer science class and one of the main reasons is because they don't have computer science teachers. And, in UTeach Tech, any STEM major is eligible. And so, Computer Science majors and Cyber Engineering majors have always been eligible but they haven't, we haven't had a lot of them try UTeach Tech, and so we really wanted a way to get them interested in the program. And so, this scholarship provides for juniors and seniors 16,600 dollars for up to 2 years. So they could get up to $33,200 to complete their STEM degree as planned but then also take the UTeach Tech courses and be certified to teach. And then, for every year of scholarship they receive they would have a 2-year service obligation to teach in a high-needs school district. So, we’re just really hoping that we're going to get more students in those areas trying UTeach Tech and hopefully deciding they love to teach, and getting us more teachers in Louisiana who can teach computer science.

Tonya Oaks Smith 30:59
And going into areas where teachers are desperately needed too, right?

Laura Bostick 31:03
Yes. Yeah. Yeah, we're looking at how some things can be done in rural areas. Because there's so many rural areas. And so, another thing that this grant is going to do for us is, we're developing a Computer Science Education Graduate Certificate which would be available for STEM majors who aren't Computer Science or Cyber Engineering who are interested in doing this, if they were willing to do the UTeach and this Computer Science Education Certificate, they would be eligible for this scholarship but also for teachers who are teaching now, who want to get some skills in Computer Science Education, because it's going to be an all-online program. And so, we really want to reach teachers just all over the state.

Tonya Oaks Smith 31:51
Well that sounds… It, it's wonderful when you come from a rural area to hear about presenting opportunities for for great careers to our students when they start out,

Laura Bostick 32:04
Right. Yeah, everybody wants to give their students the opportunities to get a good job and I know that, you know, it's hard for them to not be able to offer things, to not be able to get teachers to come, you know, to some of these areas. But if they themselves can get some training, you know, they'd love to help.

Tonya Oaks Smith 32:26
So, you're busy, busy, busy sounds like.

Laura Bostick 32:30
Yes.

Tonya Oaks Smith 32:30
What else is there?

Laura Bostick 32:31
What else is there? Well, my daughter that I told you about is graduating high school this year which is unbelievable. And so, we're looking at where she's going to go to college, and what she's going to major in. And clearly since I'm an engineer and her father is an engineer, she has no interest in math or science. So, I'm trying to try to speak her language, her Liberal Arts language, and help her with that. And, it's just getting ready, getting this scholarship program ready so that we can start awarding scholarships for Fall. And so it sounds easy, it sounds like you get a bunch of money and you can pass it out, but you know, we have to develop this, you know, these classes, and we have to develop the certificate.And so, it's just a lot of upfront work working on that. And then, I've recently been working on the marketing materials for that program so we can get that out. It's a little hard sometimes, because the UTeach Tech program is a joint program between the College of Education, the College of Engineering and Science, and the College of Applied and Natural Sciences but it's housed in the

College of Education, so we're housed in the place where we're not with our target population, right? Because we're trying to recruit STEM majors. And so, we're trying to figure out ways to better reach those students and so, we're doing posters and we're, you know, going to have information sessions. And it's been a strange year, you know, for everybody where students couldn't go into classes and try out teaching, you know, so, it's, we've had some numbers go down. And we're really looking at “Hey, looks like this next Fall we're going to get back to quote “normal” unquote, and,” I hope, “get our students back in classes.” and “How can we get a nice, big group to start back up with that?”.

Tonya Oaks Smith 34:48
Well, we're, we’re hoping. And, we will put the link to UTeach Tech in the show notes...

Laura Bostick
Perfect.

Tonya Oaks Smith
… and we will put the link toward the Cyber Tech or, Cyber Teach, sorry, LA Program in the show notes as well. Thanks for joining us today, Laura, I've learned a lot, and I hope our listeners have learned a lot as well.

Laura Bostick 35:10
Thanks so much for having me.

Gavin Kelly 35:13
Louisiana Tech University's UTeach Tech helps prepare the next generation of teachers to share their love of science, technology, engineering and math, or STEM. UTeach Tech students receive a Bachelor's Degree in any STEM content area including computer science, along with a UTeach Tech Minor that can be applied to a teaching certification in secondary mathematics or science. Through UTeach Tech, STEM majors gain the knowledge, skills, and experience necessary to work either in industry or in the classroom. We train teachers, they change the world. Find out more at uteach tech.com. That's the letter uteachtech.com.
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