

➤ **Dr. Streveler: Welcome to the Research Briefs podcast.**

I'm your host, Ruth Streveler coming to you from the School of Engineering Education at Purdue University.

The goal of Research Briefs is to expand the boundaries of engineering education research. In these podcasts we'll speak to researchers about new theories, new methods, and new findings in engineering education research.

My guest today is Dr. Shawn Jordan associate professor of engineering at Arizona State University.

Shawn has begun some fascinating investigations of storytelling, and we'll be focusing on aspects of storytelling that Shawn's using in his research in the podcast today.

So, Shawn, welcome to Research Briefs, I understand you're in beautiful Mesa, Arizona and that it's shiny and beautiful there.

❖ **Dr. Jordan: Yes, it's a wonderful Spring Break destination and thank you Ruth, I'm very excited to be here with you today.**

➤ *Thank you. So, we're talking about storytelling today and we'd love you to talk about your own story to get to storytelling and particularly a little bit about how you came to be an engineering education researcher in the first place.*

- ❖ **Absolutely. And I'd actually like to frame that as a story that I call, "When the Right Path is Wrong." So, when I started off as a Ph.D. student I pursued a Ph.D. in electrical engineering. And, partway through I had just finished defending my proposal for my dissertation research and came out of the room and was kind of stunned because I realized that I should feel excited that I had just defended this proposal, but I didn't care. And, I did a lot of reflecting on that over the coming days and realized that the path that I was heading on was not the right life path for me; but I didn't know what the right path was at that point in time.**

Now, as I was reflecting on this I was walking across campus and ran across a former student, Matthew Verleger, who's now an associate professor in engineering education at Embry-Riddle, on the sidewalk and he told me about this brand-new Ph.D. program that he had found in engineering education at Purdue. And so, from there I took a few classes in the new department and for the first time it felt wonderfully comfortable, like I was at home. I liked the people, I liked the content, I liked the discussions, and it felt like the right fit. And so, that summer I told my professor in electrical engineering that I was going to leave, and he got quite angry with me. He told me that I was never going to succeed, no one was ever going to hire me, no one knew what engineering education was, so it didn't have value and then he fired me on the spot.

➤ *Oh, my*

❖ *And so, that fall I fully transitioned to engineering education, found a professor and community who accepted me for who I am and what my interests were, finished my Ph.D., and started applying for jobs. But, most of those jobs were outside of academia because frankly of that prior trauma that I had had with my professor in electrical engineering and I'm like, "This is not what I want to experience anymore."*

But, I did apply to a single job as an engineering professor here at Arizona State and was hired, which in and of itself was somewhat satisfying because my professor in electrical engineering had said, "Well, you're never going to get a job as a professor." And so, that was very exciting to me.

And not only that, but I've been highly successful in my role. I'm respected as teacher within the school, I've been fortunate to receive a number of grants to support my research, and right before Obama went out of office I was awarded a Presidential Award for my work with the Navajo Nation.

And, what I learned through this whole process was that the path you see and want isn't always the best path for you. And sometimes you need to follow your heart and take risks in order to discover your true path in life. I have found my path and I'm truly grateful that it has included you and Purdue engineering education.

➤ *Well thank you, Shawn that's beautiful. And, I have this fantasy that you're able to send the picture of President Obama shaking your hand for getting the PECASE award and send it to that professor that said you'd never have any success. ((laughing))*

❖ *((laughing)) Yeah.*

➤ *That's kind of a nasty revenge, but it seems, well not nasty I guess, but anyway it seems fitting.*

❖ Yeah. Well, and to fast forward in how I've gotten into storytelling, so I recently received tenure and as I was going through that process I really started asking, "Well, what's next? What direction do I want to head?" And, in the process of just networking and meeting people in the greater Phoenix community I discovered the South Mountain Community College Storytelling Institute in Phoenix, Arizona, which is the first-ever storytelling institute in the nation that is focused on traditional oral storytelling as a pedagogical method, a tool for promoting growth, and also for building community.

And so, my wife and I took a couple of classes in the evenings in both the art of storytelling and personal storytelling just to explore uses of storytelling in different contexts of research, such as grant writing and conference talks, and teaching such as lectures, mentoring and design projects, and also just personal growth in connecting with having empathy for others and connecting with others and building community. And I have to say, I absolutely fell in love with this community because of those elements.

I mean you come out of these classes feeling incredibly connected to the other humans even though we may come from completely different points in life, different ages, different ethnicities, different genders, different sexualities, different religions. But, it is a beautiful snapshot of diversity in

society and how we're all humans living in the same place on the same planet.

And, all of this just completely sparked my mind to be like, "Oh, my gosh, where can this be used? How does this relate to my research? How does this relate to my teaching?" This excited me quite a bit and has led me to apply to take a sabbatical at the Storytelling Institute this fall.

➤ *So, could you tell us a bit more about some of your plans for your sabbatical and how you're going to explore storytelling?*

- ❖ **My primary goal for my sabbatical is that I want to deeply immerse myself and develop unique expertise in oral storytelling in engineering education. And this is going to take a few different parts, one of those being teaching.**

So, I'm working with a faculty member at the Storytelling Institute by the name of Marilyn Torres who is going to co-teach a STEM and storytelling class with me that is geared for engineering students who are attending classes at the storytelling institute. And so, we'll be developing a culturally relevant pedagogy-based course on storytelling in STEM contexts including things like entrepreneurship and human-centered design, outreach training, mentorship, marketing; there are a lot of different ways to connect. So, that's part one.

We're also planning on working on a proposal that will help build a pathway from the community college to ASU and specifically with underrepresented students and using storytelling and STEM brought together to help those

students see themselves in collegiate pathways.

And then, finally, my hope is to take what I've learned, and in particular, through exploring storytelling in research more deeply and put together a storytelling for engineering educator's workshop that will be open to our community for others who are interested in bringing storytelling into their work.

➤ *I hope you invite me to that workshop.*

❖ Absolutely, absolutely.

➤ *Okay, yes, I want to be there; this is just so fascinating.*

So, Shawn, you were kind enough to share your sabbatical proposal and one of the areas that you spoke about in the proposal was using storytelling to broaden participation in STEM. Could you say just a little bit about how you see that working?

❖ So, in the summer of 2017 I co-taught a chain reaction machine camp with a storytelling institute faculty member, Marilyn Torres who I mentioned earlier, at a school up in the Navajo Nation which was Greasewood Springs Community School. And, in this camp students learn to tell stories of the life pathways of Navajo professional engineers and then they design chain reaction machines that honored them and their contributions to the community. One of the key tenants of storytelling, and particularly oral tradition storytelling, is that any time you tell a story, even if it's someone

else's story, part of you and your identity is inherently embedded into that story because it's through your lens.

And so, seeing the experience these kids had in learning these stories and then using them converting them into a product that was an engineered product, was truly transformational because it opened my eyes to the possibility that it's not just about listening to stories and having the expert come in and share their story of what they're doing, but it's about engaging people in those stories that they're hearing so that they're retelling them and sharing them with others, and adding in elements of their own stories into those stories. And I think that that's something that for me is pretty transformational because it's a different take on how we've been thinking about story and its role in broadening participation. And so, I'm continuing work in this area and I think there's definitely a lot of potential.

➤ *Yes. So, the typical outreach program will often have people come in who are associated with that particular group which is often and underrepresented group and then folks say, "Here's how I did it. I overcame the odds." And so, what I'm hearing you say then is another approach which you actually experienced as being really powerful is that instead of, or maybe in addition to, hearing from the people directly then the students themselves retell the story and then that story becomes part of them.*

❖ **Yes. And also, part of them is in that story because they're telling it.**

➤ *Yes, yes.*

- ❖ So, it's not just about memorizing a script and reciting a script, and in fact, with oral storytelling they encourage you to not memorize the story like an actor would, but rather to think of it in terms of scenes and you are painting a picture of those scenes. And it's okay if the details aren't quite perfect because at the end of the day it's your story, you are telling that story.

➤ *That is really transformational.*

- ❖ Yeah. One of the key points of storytelling, and particularly oral tradition storytelling, is that they believe whenever you tell a story, even if it is someone else's story, that part of you is in that story because it's being told through your lens. And that, to me, is one of the things is so transformational as both a research approach as well as a teaching approach, because if we can get underrepresented students not only learning but telling stories of people in engineering pathways then that might help shift their identities as well.

One of the other interesting things about storytelling that resonates with me as an engineer is that they focus a lot on the structure of stories. And, one of the most classic structures that is used is the notion of "The Hero's Journey." And that is a theory that is based on a monomyth developed by narratologist, Joseph Campbell, and published in his book, *The Hero with a Thousand Faces*.

And this theory has its roots in anthropology where they examine the

structures of hero stories across cultures and time and discovered that really there's a single monomyth that can be used to model many, many different stories in using this hero's journey. And, in its simplest form that monomyth is basically how things are or were, what changed, and how things are now. And that's the basic form of many, many different stories.

Now the form that Joseph Campbell published in *The Hero with a Thousand Faces* actually has 17 steps in it and there are many different forms of the hero's journey if you Google it. But, just as an expert designer will design their design process and tailor it toward a particular application, expert storytellers will tailor their structure to the particular story and the particular context.

➤ *And, as you were talking about storytelling and creating the story together, it made me think about narrative methodologies. Does it make you think of that too? And, have you started to think about this as a kind of narratives methodology?*

- ❖ Yeah, I definitely think there's overlap. And, in particular, one of my former graduate students who's now a postdoc, Chrissy Foster, did her entire dissertation using narrative methodologies of Navajo females who were involved in STEM in some way and their life pathways. We've been in active discussions about next steps for her work and trying to figure out, "Well, what does it mean to apply a storytelling lens to the dissemination of this work?" because the participants had shared their stories, she analyzed those stories and now is trying to convert them into a form that is

appropriate for dissemination.

➤ *Have you reached any thoughts about that?*

❖ I'm not ready to share about that yet.

➤ *Okay, a future podcast.*

Shawn, I think you've already started to say this a bit when you were sharing your story in engineering education, you were saying, people really need to take risks and be true to themselves and listen to their heart when you have a path, and it's like, "Oh, this isn't right for me. Oh, this feels right, I guess I'd better do that even if my professor says, 'You'll never work again.'" But what other advice might you have for engineering education researchers who might want to use storytelling, or other new methods of research?

❖ I think when communicating about your work to others, being intentional with how you tell your story is very, very important. In the storytelling world they talk a lot about, "begin with the end in mind." And so, if you are trying to structure a let's say grant proposal, or a paper, or a research presentation, then try framing it as a hero's journey; so how things are or were, what's the problem, and what changed or will change, and then how are things now. And, you can apply this in all of these different contexts pretty easily.

So, as an example, I use oral storytelling in the preparation of grant

proposals. And, the way that I do that is, when I'm preparing a grant I will try and develop, and some people call this "an elevator pitch," but I'm being intentional with the storytelling structure too. I will go and share an elevator pitch, or a story, about the proposed grant to a variety of different colleagues who are willing to provide critical feedback. And, I think of each time I tell, as being an engineering design guy, I think of it as a prototype.

And I get feedback, I update prototype, and then I repeat and share with someone else. And, what I've found is that because grant review panels typically have people from a variety of different backgrounds and specialties within engineering education, by talking to a variety of different people and sharing that story up front it can really help your grant land. Because if you have a solid story, particularly in the first couple of pages, then that goes a long way with reviewers, whoever they are, being academics in being able to understand, "Oh, okay, this is what they're trying to do." And then that sets you up positively for the rest of the proposal.

➤ *Excellent. Any other tips?*

- ❖ Yeah, I think also you can apply this same approach to the preparation of promotion and tenure packages. I mean there you are literally telling your personal hero's journey as a faculty member who is applying for tenure and you are the hero.

And so, to me it's even more important in this context to share those prototype stories and get feedback from a wide range of faculty because if your institution has more than just an engineering school then the faculty

reviewing your application somewhere in the process are not even going to be in your field.

So, for instance, when I went up for tenure I talked to storytellers, I got feedback from lawyers, I got feedback from creative writers, I got feedback from design folks. I went pretty widely within my networks in the university to get feedback because that really represents the pool of people who, at the upper levels of the university, would be reviewing my story and it needs to land not just with engineers but with people more widely.

➤ *And, obviously, you were successful.*

- ❖ Yes. And then, I think the other thing too, with storytelling and research is it's really important to consider the role of your voice in your research.

I was invited last year to give a talk on my career research on the Navajo Nation to the ASU board of trustees. And this was at the time that I was taking one of the storytelling classes and so I thought, "You know what, I'll give a dry run of this talk in the way that I would give a research-oriented talk to the class." And, being a "good researcher," and also being non-native I mostly left myself out of the presentation, and instead talked primarily about the history of the project, the research design, and the results," as one would.

And, at the end the storytelling class, who was a people from a wide variety of different backgrounds and academic levels and such, and the class said, "But wait, why are you doing this? Where is your voice in your research?"

And I took a step back and I reflected for a few days on this because we talk so much about how, as researchers, we want to minimize our voice in our research so that we don't overrun our participants. And, I had been particularly cognizant of this being non-native and not wanting to come in and try and speak for the native participants in my research study. But, at the same time, this raised a red flag with the listeners because they said, "Well, your motivations for doing this research are just as important as the voice you bring to the participants."

And so, after that I reframed the story as a hero's journey and led with how I came to the research, how I discovered the need, the process of receiving funding, and how I considered the ethical implications of my involvement as a non-native. And then I shifted to the design and results of the study itself and shifted the voice in the story at that point to be of the participants and making it clear that this is the participants' voice. And then finally I returned home with the story to share the impact that the research is having now.

And this was truly liberating to me as a researcher and is an ongoing point that's frankly challenging my thinking as to what it means for our research when we try to, or pretend to be, totally objective and eliminate our voices. And I know some of this is covered through the subjectivity statements that we'll put in some research articles, but at the same time is it truly ethical to compartmentalize your subjectivity to a paragraph and then pretend like the rest of a paper is objective? I don't know.

➤ *Yes, that's a fabulous point.*

Well, Shawn, you have raised so many interesting points. Again, the purpose of Research Briefs is just to help expand the boundaries of engineering education research and I know your story has inspired me and I think it will inspire many others. Thank you very, very much.

❖ Well, thank you, Ruth, I appreciate it.

➤ *Research Briefs is produced by the School of Engineering Education at Purdue.*

- *Thank you to Patrick Vogt for composing our theme music. The transcript of this podcast can be found by Googling "Purdue Engineering Education Podcast." And please check out my blog, RuthStreveler.Wordpress.com.*