

Episode #7: Interview with Dr. Benjamin Flores, Professor of Electrical and Computer Engineering at University of Texas El Paso

Ivory Toldson:

Hello, and welcome to another episode of Collaborative Strategies for Inclusive Change. This is the official podcast of the NSF INCLUDES Coordination Hub, where we highlight projects and partnerships that ensure accessibility and inclusivity in the nation's STEM enterprise. My name is Ivory Toldson. I'm a former co-PI of the NSF INCLUDES Coordination Hub. I'm also a professor of Howard University. I also work with the QEM network and I'm currently the national director of education, innovation, and, research for the NAACP, but I'm excited to be here today with Dr. Ben Flores. The purpose of this podcast is to draw attention to pathways, policies, opportunities, and practices that address institutional barriers to equity, inclusion, and broadening participation in STEM education and careers. And I can't think of anybody else more perfect to talk about this topic today. Dr. Flores is a professor of electrical and computer engineering at University of Texas El Paso, he also obtained his MS and BS degrees from there in electrical engineering, and then went on to get his PhD in electrical engineering from Arizona State University.

Ivory Toldson:

Dr. Flores has over 25 years of managing STEM education research and training programs with more than 40 million in the research portfolio since 2005, he has been the PI and director of the University of Texas system, Louis Stokes Alliance for Minority Participation, and also the University of Texas system Bridge to Doctorate Program. Dr. Flores has engaged in so much research in so many different areas, but I was really struck by your involvement with Alliance for Minority Participation. As a PhD student, my first job was to be the graduate assistant of the AMP program at Temple University. And I just heard from one of my former students in that program, and he talked about a time when I took them to Washington DC for a conference. And he said that was a life changing experience for him, and this was in the late nineties.

Ivory Toldson:

That was an experience that I kind of forgot about, but he said that was a life-changing experience. So I know that you change a lot of lives over there with all the students that go through your program. So I want you to first talk about your experiences working with student students at the higher education level, because I know in another interview that you did with, We Are UT El Paso, you talked about the importance of K through 12 investments. So from a higher education perspective, why do you think it's important that people in your position also talk about what's going on at the K through 12 level?

Dr. Flores:

As you stated, I've been with the University of Texas Paso for more than 25 years in a capacity of directing or supporting institutional efforts to increase the participation of underrepresented minorities, in particular, in the stem disciplines. Through the years, I have been recognizing the need for transforming our institutional model and the institutional models elsewhere. One of the key points I think is working with the K12 system and realizing that what we have in many instances when we are dealing with regional institutions is that these regional institutions prepare the teachers of the students who will come knocking at our doors. And these are the students that we want to retain, that we want to advance so that they can join the same workforce. So for us, I think it's absolutely crucial that we work closely with K12 system, not only by preparing future generations of teachers who can have the tools to teach our future college students, but also thinking about providing enriching activities to the students who are in the K-12 system and who are thinking about, or perhaps just exploring the possibility of a STEM career.

Ivory Toldson:

We also know that institutions, besides our national institutions, like regional state institutions, community colleges, minority serving institutions, a lot of times they have challenges when it comes to retention and graduation rates for low-income students. I know that in your work, you've done a lot to increase the retention and graduation rates for Mexican American students. So could you talk a little bit about your success with that and some of the practices that you think would, would change that trajectory.

Dr. Flores:

So for us, it has been critical to develop support systems for our students. In that respect, we have developed a number of programs that are all based on best practices. We have adopted programs that have worked elsewhere, and we had adapted them to the reality of our institutions. So for instance, we have implemented the university seminar, which is now more than 20 years old, and this particular strategy of reaching out to our students and ensuring that they stay through their first semester and first year of studies, and that they're successful is something that I think is absolutely essential. What we had seen in the past was that our students, as they came to the university, they really struggled to integrate both socially and academically. And we felt that having a course that was taught university wide, that could improve the chances of success, that was vital.

Dr. Flores:

And we have seen over the years that this particular course has made a significant difference with a retention. At some point in time, in engineering, for instance, we had a first-year retention of about 20%. That was, that was totally unacceptable. And so we have worked extremely hard to improve that. And now we have retention rates of about 80%, which is a tremendous improvement of course. We've developed learning communities where our students were working with multiple professors who were together to integrate curricula in the first year and these learning communities of students, they would see each other in all these courses. And having that sense of community of belonging also impacted the students, not only in their

academic performance, but also in the way that they perceived what a university was supposed to be like. We have also implemented peer led team learning strategies.

Dr. Flores:

We implemented PLTL to modify the way that we were teaching chemistry here, as well as a pre-calculus and the two first courses of physics. And I think the cornerstone for the last few years has been undergraduate research, where we are trying to increase our capacity to involve undergraduate students in authentic research, where they participate in activities with faculty who have an active research agenda, who may have the resources to involve these undergraduate students. And what we have seen through the years is that students who participate in undergraduate research are much more likely to finish their degrees on time and then consider graduate school as an option.

Ivory Toldson:

It's not rocket science, is it? Sounds like

Dr. Flores:

No, it's not.

Ivory Toldson:

Yeah. Yeah. It's really about connecting them more meaningfully to academic life, learning communities, authentic research internships. So it sounds like you really harness these best practices and modified them and modified them and adapted them to a learning environment. And I was really struck by what you said about that first year, the university seminar, and dealing with students during their first year, because that seems like such a critical component. People come to school for different reasons and oftentimes those second-generation college students, they come to school because they have been told that they should go to school their entire life, and they really don't know what the alternative is. But then you have a whole nother group of students who have weighed the possibilities of a lot of different alternatives, go to school, go directly into the workforce, go to the military, any number of different things.

Ivory Toldson:

And so they come to school just to try it out, just to see if it's for them. And it sounds like that university seminar really speaks to that student. It doesn't assume that every student was just bred to believe that college was right for them, but there's this student that really needs to evaluate the institution and to understand whether or not this is for them. And you all seem to do a good job of convincing them, yes, it is, it is for you. So I know that you've received over 40 million dollars in funding and done some marvelous things with it. But I also know that you've done a lot in terms of looking at the sustainability, broadening participation, and some of those things to make sure that the project lives beyond the funding. Could you tell us a little bit about some of your strategies for building in that sustainability into your projects?

Dr. Flores:

I don't want to be remiss, not mention the fact that institutional support is fundamental for the success of all these projects. Having the support of the administration, having a president who truly cares about the region that we serve has meant a world of a difference for us. And we have been lucky to have two presidents in the period of the last, since I joined the university, actually over 31 years, who truly believe that the mission of our university has a cornerstone of a axis at another cornerstone of excellence. So it's access and excellence that we really believe in. And we have developed a culture among the faculty and the staff of supporting this particular mission. So with that in mind, we have been working on developing these programs, also gathering the evidence that will support that these programs should be sustained, that they're worth the initial investment.

We work on a regular basis with our provost, we, with our deans and sharing information with them, letting them know of what works and what doesn't, learning from our successes, and also from our failures and realizing that not everything is going to work perfectly, but that there, there are ways to minimize our inefficiencies. Many years ago, we developed a center for effective teaching that learning that was very specific to STEM, but the results were incredibly good. So the provost paid attention to that, and he believed that we should have a center at the institutional level with directors that would report directly to him. And that center has gone through multiple changes over the years, but it continues to serve the faculty primarily, and also the graduate students at the university for the purpose of improving and promoting best practices and teaching.

Ivory Toldson:

It sounds like an ecosystem of approach.

Dr. Flores:

It is.

Ivory Toldson:

Yeah. Yeah. And then all the while you're gathering the evidence to make sure that everyone internally understands why this is successful, but also to share with the funders and external partners. So definitely a lot that we can learn there. So I want to just really tell you how much we appreciate the work that you're doing and not just what you're doing, but how you're doing it and your willingness to share. So other people could benefit from your success. If anybody wanted to connect with you after they listen to this podcast, what would be the best way for them to connect with you?

Dr. Flores:

Well, they can certainly reach me by email. I am always connected. My email is B as in Benjamin Flores at utep.edu. They can also look for me in LinkedIn. And I am not necessarily a

heavy user of social media, because that tends to be a little bit of a distraction for me, but I'm in Facebook and you can look under chaos coordinator and you will find me – the reason I chose this is just upon on the type of research that I did is because I work on complex systems when I have free time. And we know that one of the trademarks of complex systems is chaos and not all chaos is bad. We just need to remember that there are things that we can control, and so that's part of my life nowadays.

Ivory Toldson:

Yeah. I like it. There's always order beneath the chaos, right. And understanding how to deal with chaos effectively is a strategy for success in life. Thank you so much for all the gems that you have given us. Thank you to the listeners for tuning into another episode of Collaborative Strategies for Inclusive Change. Make sure you share this podcast with others and log on to the NSF INCLUDES Coordination Hub website to contribute to our community of practice. So thank you all so much.

Speaker 3:

The findings in this podcast are based upon work supported by the National Science Foundation under grant number one, eight, one, eight, six, three, five. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect views of the National Science Foundation.