

**ICPSR Data Brunch Podcast Bonus Episode: STEM Education**  
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**Transcript**

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**Dory Knight-Ingram:** Welcome to this special bonus episode of Data Brunch with ICPSR! If you love data, this is going to be food for thought. I'm Dory.

**Anna Shelton:** And I'm Anna! We're working on our second season, including episodes about ethical use of data in the news and more. Until then, please enjoy this prerecorded interview with Dr. Jane Goodell, about her newest book, "Preparing STEM Teachers: The UTeach Replication Model" from Dr. Amber Bryant and our Partnership for Expanding Education Research in STEM (PEERS) archive.

**Dory Knight-Ingram:** Thanks again for joining us, and we'll see you in the fall!

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**Amber Bryant:** Hi! Thank you for listening. My name is Dr. Amber Bryant and I am a project manager at the Institute for Social Research at the University of Michigan. Here at ISR, I work for the Inter-university Consortium for Political and Social Research (ICPSR) on the PEERS Data Hub project, the Partnership for Expanding Education Research in STEM.

Today we are speaking with Dr. Joanne Goodell about her newest book, Preparing STEM Teachers: The UTeach Replication Model. Dr. Goodell is a Professor at Cleveland State University's Department of Teacher Education.

She taught high-school mathematics for 13 years in Australia and was department chair for five years. She currently teaches undergraduate and graduate mathematics methods and practicum courses. Her research interests focus on equity, reform, and professional development issues in the teaching and learning of mathematics and related disciplines in high schools and universities. Her current grants include the D-STEM, Choose Ohio First Scholarship Program with Miami and Toledo, a Mathematics and Science Partnership grant through NDF, two Noyce scholarship programs through the National Science Foundation, and the Teacher Quality Partnership program through the National Mathematics and Science Initiative.

Dr. Goodell was instrumental in bringing the UTeach model to Cleveland State and is the Education Co-Director for the CSUteach program. In August 2016, Dr. Goodell was appointed as the director of the Center for Faculty Excellence, a half-time administrative appointment.

Her co-authored book, which we will be discussing today, is entitled, *Preparing STEM Teachers: The UTeach Replication Model*. This book is a true testament to her scholarship and expertise in the field of teacher preparation and STEM training. Dr. Goodell, thank you so much for joining us today. If it's ok with you, I'm just going to jump right in with our questions.

**Joanne Goodell:** Certainly

**Amber Bryant:** Okay, awesome. So your book is specifically about preparing STEM teachers in the UTeach Model. Can you tell us what the UTeach Model is and how it helped to inspire the compilation of this book?

**Joanne Goodell:** I'd be pleased to. The UTeach Model began at the University of Texas in Austin in 1997 to help overcome the severe shortage of mathematics and science teachers in the state and nationally. It was designed by both teacher educators and STEM faculty and it consists of 10 courses in education, in STEM education. It is based on obtaining a content degree in either mathematics or science at the same time as you're doing those courses in education and completing field experiences in local schools. And this is a model that many schools, many universities had approximated but the UTeach Institute wanted to replicate that across the country. And so they were able to obtain a large grant from the Exxon Mobil Foundation and other foundations to provide initial seed funding for other universities to implement that program. And so that's why it's known as a replication model because the universities that are currently implementing that model are following the plan and the sequence of courses that the University of Texas at Austin originally began in 1997.

**Amber Bryant:** Gotcha. So it sounds like STEM teaching is very unique. Can you speak a bit to the challenges that universities face when preparing STEM teachers and how this training model helps with that?

**Joanne Goodell:** Well STEM programs, as you know, are expensive to run. And in terms of the teaching of the STEM subjects, we really need to get the teachers in the field as soon as possible so that they get a wide variety of different pre-service teaching experiences. And that's something that this model does a very good job with and that's not something that was common prior to the UTeach Model. So there are five different field experiences, starting with some students in their freshman year. They go out to a school in pairs, so there's two students together, it's a little bit less scary. They teach at the elementary-middle school level, one or two lessons very much guided by the faculty who are teaching them in those introductory courses. They're called: Step 1 and Step 2, and through those introductory courses, they get to try out teaching. And so they're exposed to the world of teaching very early in the program and that gives them an opportunity to say, "Yes, this is something that I really want to do", or "Maybe it's not for me".

So it, the recruitment of students is really greatly enhanced with those two introductory courses because they are only one credit hour each and there's no penalty for not continuing. And it gives them an opportunity to try out teaching and see if that's really what they want to do in the long term. Prior to these kinds of models, many programs did not have any field experience until the students were in their junior year, which is kind of a long way down the line to find out that, "Actually, I don't really enjoy working with students." or "I'm scared to stand up in front of a room of students."

**Amber Bryant:** [laughs and mm-hmms]

**Joanne Goodell:** And so then, you know, that kind of puts the program, you know completion part of the program way behind if they then have to switch to some other program. So I think this model, with the field experiences, is really a key part of the model, helps students make that decision, and helps them stick with the program because they know that it is something that they really want to do.

**Amber Bryant:** Yeah, I love that. I actually went through education programs, that's what my Ph.D. is in, and I taught high school English for a while before pursuing higher ed. And you're absolutely right, I did not get into the classroom until the end, (laughs) the very end. And some of my classmates did change their minds, they realized that it wasn't what they thought it would be. And I definitely like that part of this model, that early field experience I think is really valuable, and that was a very smart move to make in a teaching preparation program. So that's really awesome to hear.

**Joanne Goodell:** Well, I also think that the ... Another part of the model ... I'll just say that there are nine elements of success in the UTeach replication model. Another part is that the university commits to having full-time faculty, they might be clinical faculty or they might be regular tenure track faculty, but full-time faculty who are teaching the education courses and are supervising the students in the field experience. So they go to a school and a full-time faculty member is, you know, part of that experience. Those teachers are called Master Teachers. And not only are they responsible for teaching the early field classes but they also develop partnerships with the schools and they, you know, really focus on the teaching side of the program. They also do, in many cases, a lot of advising for the students. And so the students, you know, the pre-service teachers feel very connected to those Master Teachers in the early parts of the program. And because they're full-time, they're on campus, they're available, and they're fully involved with the program. I think many teacher education programs that are not in the UTeach Model, employ external or part-time supervisors because of the shortage of full-time faculty. And, you know, there's a whole lot of research around that and, you know, programs with accreditation issues and so on.

But definitely, UTeach Models use of Master Teachers and full-time faculty in

the field experiences is unique and I'm sure does contribute to the success of the program.

**Amber Bryant:** Wow. Yeah, that relationship building goes into my next question about retention, which is always a hot topic in teaching these teacher preparation programs. Does this model address that in any way or can it help with retention and recruitment?

**Joanne Goodell:** Well, absolutely. There's many parts of the program that help with the recruitment. And one of the is, as I just mentioned, the early field classes, the Step 1 and Step 2. In some universities, they are able to provide those free. So that's kind of a, you know, a recruiting tool as well because you can try out teaching for free.

So that helps recruit the students. We go, faculty and Master Teachers, go to introductory math and science courses, and just tell students about those, (coughs) about these Step 1 and Step 2 (excuse me) and that is definitely a very important recruiting tool, that they can try it out for free and just see how they like it. Because many students will report, particularly students in pre-med programs as I'm sure you're aware in your role, many students would like to be in the medical professions but the entrance requirements are pretty steep and a lot of students don't make it into the medical field or not into the field that they want to.

So many of them have not even thought about being a teacher and after they've tried teaching in the Step 1 class, realize "Gosh, I really enjoyed that" and "This is going to be something that I could have as a second, you know a backup kind of thing. What if I don't get into medical school?" But many of them realize that "Well, actually I don't want to go to medical school anymore, I want to be a teacher."

And so it does give them an alternate career path. And because they are getting a degree in either math or science, they still have that option to go on into graduate school and become, you know, science research or do another kind of math or science-based career. But with this, because it's rolled into the four-year degree plan they can finish their four-year degree plan with a teaching license and their regular degree.

So they have two career options and that's a very important recruiting tool as well.

**Amber Bryant:** Oh, that is so awesome! And that's exactly what happened for me in undergrad. I was an English major and I took a class that had me going to high schools for a writing workshop, and I had no idea that I was going to fall in love with the classroom. And I've never left, like since that moment I was a teacher ever since. I said, "I love this! I can't believe they would pay me to do this (laughs)." And it has been my passion ever since.

So it is so good to hear that that is still happening and that teachers and faculty are aware that that exposure sometimes is all that a student needs. Because you don't know what you don't know.

**Joanne Goodell:** Correct.

**Amber Bryant:** That's really awesome to hear. So when you wrote the book, who was your intended audience in your mind? And how did you hope the book would be used and referenced in the future?

**Joanne Goodell:** Let me just put a little word in there. I was the Editor of the book. So what that means is, I invited 29 sets of people to write the chapters and we edited them together, Selma Koc and myself, had them published in this book. So I wrote a couple of chapters with a couple of other authors. But there are, I think, over 50 authors or maybe even a little bit more than that, who wrote the chapters about the book, about the program, I should say. And what we hoped is that other universities considering how to improve their recruitment of STEM teachers and their production of STEM teachers, so increase the number of STEM teachers they are putting out there, that they would be the audience, part of the audience for the book. Also, we hoped to garner some kind of international audience, other countries, to see how successful this program has been. And for policymakers to say, really we need to be supporting programs like this because they are very expensive to run. For university administrators to see how being part of a huge national network of now 45 universities and 11 HBCUs, so we're now well into the 55-60 range of universities that are replicating these programs. So all of the faculty at both universities as well, so we're hoping it has a very wide audience. And thank you for the invite today! That will help us.

**Amber Bryant:** Yes! That is so awesome to hear. I love to hear that because as I was reading through the book, I'm like, "This is a great model! (laughs) I hope that it is making its way around." So that's awesome to hear, especially to hear it's at the HBCUs. You know, that's often an untouched audience. So I like that.

This is the last question, we're going to conclude for today. But as a takeaway, what can you tell professors, scholars, and other university staff members, just a piece of advice that they could add to their programs when they're preparing their STEM teachers, whether or not they have the UTeach model, what is one thing that maybe they could do to kind of help with their students' preparation?

**Joanne Goodell:** That's a very intriguing question. (laughs) There are so many pieces of advice I could give. But I think having the Master Teacher model, where you have full-time clinical faculty involved in the field experiences from the beginning of their program through to the student teaching and even beyond, which is something that the UTeach Model promotes as well, is really one of the key elements. I think because there is that continuity, they know the students

really well, the students feel comfortable and, you know, seeks their advice when needed. And I think that really really helps with the feeling of belonging to the program and that feeling of belonging and being in a, you know, developing a teacher identity definitely helps retain them once they go into teaching. And part of my research has demonstrated that quite clearly that the UTeach grads, you know, their satisfaction with their program and the student teaching does predict their entry into teaching and their intention in teaching. UTeach grads are retained at 92% after three years, researchers show [inaudible].

**Amber Bryant:** Wooow! (exclamation) That is amazing for teachers, that's awesome! (laughs)

**Joanne Goodell:** Yes, it is. So there's lots of research on the program now to bear out many of the things I've said, so I'm encouraged to look at that. Much of it is also represented in the book as well.

**Amber Bryant:** That's so exciting. I can't wait to promote this work. This has been an amazing session with you. Thank you so much for your time and being with me today, Dr. Goodell.

Listeners, you can purchase the book online through Amazon as well as through the Information Age Publishing website. There are several online retailers who sell the book so hopefully, you can find a good retailer to purchase for you. Preparing STEM Teachers: The UTeach Replication Model. Again, thank you so much for listening, and thank you, Dr. Goodell for your time this morning.

**Joanne Goodell:** Thank you.

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