# 2_Stats Ed Cut1

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SPEAKERS

Donna LaLonde, Leticia Perez, Christine Franklin

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D **Donna LaLonde** 00:15

Hello, everyone, I'm Donna LaLonde and I work at the American Statistical Association. And one of the joys of my job at the ASA is to be able to support our wonderful volunteers and collaborators on our education initiatives. The ASA is always looking to the future, and we know that the way to get to that future is to invest in pre-K to graduate school education. I'm delighted to be here today with two colleagues who have made tremendous contributions to our pre-k-12 initiatives in terms of teacher professional development and, as we'll hear in the conversation, are continuing to make contributions. I'm here with Leticia Perez and Chris Franklin - two of the team who wrote the GAISE II document, which I think we'll have a chance to discuss. But to get started, I'm going to ask Chris and Leticia to tell us a little bit about themselves and introduce themselves to all of you and so I'll start with Chris.

C **Christine Franklin** 01:31

Okay, well, I'm Christine Franklin. I'm currently serving as the ASA K-12 Statistical Ambassador. I've been in this role for five years, and it's just been a wonderful five years advocating for statistics education at K-12. Before I assumed this role, I retired from the University of Georgia. I'm now emeritus faculty in the statistics department from UGA.

L **Leticia Perez** 02:01

And, hello, my name is Leticia Perez. I'm currently the STEM C3 curriculum director for the teacher education program at UCLA and also a part of the UCLA science project. This is where we support in-service and pre-service teachers with science, statistical thinking, and computational thinking. Before that, I was a classroom teacher primarily at 9th and 11th grade for high-school science.

D **Donna LaLonde** 02:30

So, Leticia, I'll start by asking you why you are willing to devote so much of your time to innovation in statistics education? Why is that important to you?

L Leticia Perez 02:44

Well, statistics really came on my radar as a teacher with the Next Generation Science Standards. There's a science and engineering practice called computational thinking and when you start digging into it, I saw this entire world open up with statistics. It really became apparent to me that a lot of my students weren't being provided the opportunity to engage with data and provided statistical tools to make sense of the world around them. The world, as we know, is rich with data and it's only getting more complicated, so I wanted to figure out how can I bring those opportunities to the students in my classroom and then share those opportunities with teachers around me.

D Donna LaLonde 03:30

And, Chris, you and I have had many conversations about why you invest so much energy in statistics education, innovating, thinking to the future, but share a little bit of your motivation.

C Christine Franklin 03:46

Well, I would say over 25 years, my passion has always been more trying to integrate statistics education at the K-12 level, because I think it's imperative that we prepare all of our students to be statistically literate by the time they graduate. Instead of the philosophy that, well, we'll wait to our students become undergraduate students at the collegiate level to learn more about statistical reasoning.

D Donna LaLonde 04:17

So, for both of you, I wonder if you could talk with me a little bit about some of the stumbling blocks. We know that there are challenges, and a part of your work in education at the ASA is helping to overcome those challenges.

C Christine Franklin 04:34

I think especially at the K-12 level, one of our big stumbling blocks is what I like to call "a change of culture," to where the prevailing perception has always been that--especially in mathematics--calculus is the summit. We want all of our students to reach calculus, but I think that in our changing world where we're very data driven and all of our decisions are motivated by data, that that culture needs to change. There needs to be more prioritizing of statistics at the K-12 level.

D Donna LaLonde 05:21

Leticia, maybe you'll talk about the stumbling blocks, and then also a little bit about what you see is the way forward.

L Leticia Perez 05:30

I think one of the stumbling blocks are those silos that pre-k-12 and undergraduate falls into. It's like, where might statistics live? And this idea that statistics is this in service to understand the world and describe the world. Really, statistics can live in many different places in a day of a student, but right now, it's only in these little periods that are called statistics, maybe at the high-school level. Reimagining all the opportunities where students could interact with

data and use data to describe and explain the world around them is a big task, because it's helping teachers think about what they've taught in different ways. It's thinking about the favorite books and trying to quantify which books are checked out in the little library in the classroom, looking for those opportunities and helping teachers tell different stories about statistics and math and data, because a lot of folks have internalized really negative stories about their relationship. And so I think one of the ways moving forward that we've really been talking about is this idea of statistics is a form of data storytelling. And our elementary teachers are experts at telling stories and helping students learn to craft stories. But this is just a different form. And I'm really excited because that seems to be an excellent entry point. And students are excited; they want to tell stories. This digital generation is very interested in telling stories from different perspectives. And I think that's an awesome entry point for getting people excited to talk about statistics.

D Donna LaLonde 07:21

So, I wondered if you could talk to me a little bit about teacher professional development, some of the things that you're most excited about.

C Christine Franklin 07:30

Our teachers need so much support when it comes to thinking about how to deliver a statistics curriculum in their classroom. I would say most of our in-service teachers currently teaching have either had maybe one course in statistics during their educational training or no statistics at all. Seeing these statistics standards in their curriculum, most of them will tell you they're at a loss as to how to implement this into their classrooms. So, professional development is more important than ever. You can have the best curriculum in the world, but if your teachers do not know how to implement that curriculum, it's not going to be successful. So, investment in teacher professional development is critical to the future of our success with implementing these standards. I think the other thing that we have to think about, as well, are teacher preparation schools and how we can help integrate more statistical training in their programs as pre-service teachers are coming through. In my work as the K-12 ambassador, I've had so many teacher educators--who usually tend to be mathematics educators--tell me that they they truly understand the importance of more statistical training in their programs, but they, themselves, are uncomfortable with knowing what they need to do to implement this training. So, I think we have to think not only about our future teachers and our current teachers, but also helping our teacher educators as they try to plan for the future in your programs.

D Donna LaLonde 09:24

And, Leticia, I know you mentioned at the beginning that you came at this as a science teacher, right, from the perspective of the next generation science standards. So, how do you think about professional development that is transdisciplinary?

L Leticia Perez 09:40

Yes. So, I'm one of those teachers who climbed the calculus summit and never took any statistics. Once I was in the classroom, I realized the math that I needed and wanted to help my students make sense of the experiences that we were having didn't really fall under the traditional math sequence, but it was in the field of statistics and what was becoming data science at the time. I think that one of the difficulties in terms of teacher support is just really having time and guidance and coaching to see where those opportunities lay in the classroom, experiencing integrated lessons that have both the content that you're responsible for as a science teacher, and then where are those opportunities and how to bring them in. And the statistical investigative cycle, I was introduced to that very early on,

and I made so many connections to the science, and I was like, "Oh, wait, these live together, and I might be doing a lot of this already." I just don't have the vocabulary and the richness, and I need a little bit of support bringing it into the classroom. So it [professional development] is giving teachers the opportunities to make those connections, and then supporting them with the concepts and content so, that way, they can really take it much deeper.

D **Donna LaLonde** 11:07

So, that feels like a perfect segue for me to say, "Chris, I'm going to let you give a shout out to the document cover, which is displayed in my background, which is the GAISE II document." I know that you co-led the writing team in part in your role as the ASA K-12 Statistical Ambassador. I wonder if you could talk a little bit about GAISE but, as well, share some of the activities that you've been engaged in the role of the K-12 ambassador.

C **Christine Franklin** 11:42

The document was originally written in 2005, and has been very instrumental in influencing standards throughout in research. And then the NCTM/ASA Joint Committee realized that the document, after 15 years, needed updating. Especially with the way data has changed, the types of data technology, and this whole new area that we are working with called data science. So, we pulled together just a tremendous team and Leticia was one of the stars of this team. She came in to join us as a science teacher. And I think that as you read through the document, you will see these wonderful examples that we we give to sort of illustrate our recommendations for what should happen in K-12 that are very science focused and just very rich. We have a lot of the traditional types of examples that you would expect to see in a statistics curriculum, but we also have lots of new examples and recommendations that are more in the data science flavor. This document has already been used by different states here in the United States as they are revising their standards and incorporating more statistics. So, I think this is just a wonderful example of what the support of the ASA and NCTM and how they've made this one of their strategic initiatives. This document is having a tremendous influence right now on state standards.

D **Donna LaLonde** 13:31

And I know in your role that you're spending a lot of time supporting the implementation of the recommendations in GAISE in terms of workshops and conference presentations. And, so, of course that's much appreciated. As you said, it was a great writing team, so a shout out to all of the GAISE II authors for their contributions. I would like to conclude our conversation by asking you all to give a call to action to our ASA members. If folks are interested in volunteering, what are some things that they they can do to to support, especially pre-k-12 education? Leticia, I'll start with you.

L **Leticia Perez** 14:24

Sure, I think, in terms of call to action, I want to recognize that all students should have access to statistical thinking--to training and statistical thinking. Right now, that isn't happening in the name of inclusion and equity. We need to help support teachers and support schools into finding innovative ways to bring statistics all across the pre-k-12 experience, not just the end courses and the 11th and 12th grade. So, this might look like if folks have a background in statistics, becoming involved at the school board level, offering to support teachers, and you'll be amazed how many teachers will welcome someone with math and statistics background into their classroom, to tell stories about data and how they interact with numbers and really paint math and statistics and bring life to it. That's one way that I know, as a teacher, I was always looking for people who wanted to come into my classroom.

D Donna LaLonde 15:29

Thanks to both of you for talking with me. I think we could agree that we could talk all day about the richness of GAISE and the important work, but we'll we'll conclude here. Thanks very much.