Mark Royce (00:00):

Hey, Jeff, how's it going?

Jeff Steinert (00:02):

Good, Mark. It's great to be here.

Mark Royce (00:05):

Awesome. I'm glad you're here. And I really appreciate you taking time to connect with me for our modeling talk. I wanted to just have you tell us a little bit about yourself for those who are listening, who don't know who you are. Tell us a little bit about where you are and what you're doing.

Jeff Steinert (00:28):

Well right now, I'm teaching at a charter school in Phoenix. I've been here. This is my 16th year at Arizona School for the Arts. We moved here from Maine in 2006 specifically so my oldest son who was nine at the time could go to school here. And it just happened to be this confluence of events that brought us here. My wife discovering the school when we were here on a trip and then a job opening up and they were looking for a modeler and everything just kind of fell into place. And we ended up here. It's a college preparatory charter school, public school, for performing artists. So it's singers, dancers, musicians, theater folk, from every piece of theater from acting to, musical performance to stage craft, technical sound, lighting, all those kinds of things. It's a great place to teach. The afternoons are great, cuz you walk around and you just hear students singing, people playing music. It's amazing. <laugh>

Mark Royce (02:02):

That's very cool. It sounds a little bit like my wife's charter school that she teaches at and she's teaching chemistry. You're teaching physics there, is that correct?

Jeff Steinert (02:13):

That's correct. Yeah. All the juniors take physics.

Mark Royce (02:18):

So you said the school was looking for a modeler, right? So tell me a little bit about what drove them to want to find a modeler.

Jeff Steinert (02:28):

They'd had someone who'd gone through the modeling workshops that had been their physics and chemistry teacher up through 2005 and they'd had another teacher for a year in between. But they were really looking for someone who really understood the modeling instruction, who had done it for a number of years. And had some experience with it. And I'd been doing the physics piece since 1998. So, that was a great match. And I think they kind of figured like I did that I could pick up the chemistry 'cuz I understood the theory behind modeling, and knew how it worked so I could make the chemistry work. And I did, I went and learned from Larry Dukerich the summer afterwards, to actually make sure I was like up on the chemistry concepts and things like that.

Mark Royce (03:35):

That's convenient that he's there in Arizona alongside of you there. That's pretty cool.

Jeff Steinert (03:40):

Absolutely. That was another reason for coming here, actually. That was probably the third out of four or five things that just fell into place.

Mark Royce (03:54):

So you're teaching both chemistry and physics now?

Jeff Steinert (03:58):

I was. When I first came here, the school was smaller and we only had about 50 students per grade. So that was two classes. And so I taught physics to the juniors and chemistry to the seniors. Since then we've expanded. So now I only teach the juniors and we have about a hundred students per grade level. So that's a full-time teaching load.

Mark Royce (04:30):

Now your master's degree was in mechanical engineering.

Jeff Steinert (04:33):

That's right.

Mark Royce (04:34):

Talk to me about how you, how you rolled from that into the two sciences, the physical sciences you're involved with.

Jeff Steinert (04:42):

I finished my masters in the mid-eighties and that was really a time where the jobs were all in Southern California in aerospace and defense contracts. You know, things like that. And it wasn't really what I was interested in doing. And my father had been a teacher since the fifties. So it was always kind of in my mind that, teaching might be an option. And I found when I was in grad school that I was good at explaining things to other grad students. And so it just kind of fell into place. You know, it was another one of those things where a job opened up and I applied for it and I got it. And I was teaching at a private Catholic girls' high school in the mission district in San Francisco. And I did that for four years and I taught everything from chemistry, physics, advanced algebra, pre-calc. There was a lot of stuff.

Mark Royce (05:56):

That's pretty cool. So tell me about the path that moved you from where your degree was into modeling, specifically. I mean, how did you get introduced to modeling, what was the circumstances around your journey there?

Jeff Steinert (06:12):

I have a friend who was on the staff at Las Alamos, in the mid nineties. And he sent me the first page of the 1995 article by... The first author was Malcolm, but David and Greg Swackhammer, David Hestenes and Greg Swackhammer. And of course it was just the first page. He sent me the first page of like four different articles from AJP. I still have it somewhere, actually. And you read the first page of the thing and it's like, wait, where's the rest of this <laugh> you know, so, one of the things I'd noticed is that my students would be really good at something right after I taught it. And then there would be a quick decay in the knowledge and understanding and recall of those things so that we come back around to something and they'd completely forgotten what we did three months ago, you know, in terms of how to apply it and didn't see the connections.

Jeff Steinert (07:30):

And so when I read the article, I thought, well, you know, this seems like a good option. Like, let me see what it's about. And I'd already been familiar with Arnold Aaron's work from his first thinner publication, not the big thick one that we use now, for the modeling workshops, but the thinner version. I'd actually like read some of the articles connected with it. So Lillian and McDermott's work, Ron Thornton and I'd actually been down to Tufts. By then I was teaching in Maine. So this is 1990s, there was a cross-country move there. You might have figured that out.

Mark Royce (08:29):

From California all the way to Maine-- that's that's a big move.

Jeff Steinert (08:34):

So I, I got interested in like using micro processor-based equipment when I was at some conference at Tufts and I don't remember what it was, but one of the afternoon options was to go over to Ron Thornton's lab and they had motion detectors. Like these were the first ultrasonic motion detectors. Right. <laugh> and I spent like the whole afternoon there going just like, this is the most incredible thing I've ever seen in my life. I've got to have these. Right. And then began to like kind of gradually collect a little bit of equipment as my budget allowed. But then this option, this opportunity really, I got in touch with Jane Jackson and asked about like, okay, obviously I missed the first, the 1996, 95-96 rotation because I didn't get the article until a couple of years after it had been published.

Jeff Steinert (09:48):

And so Jane let me know that they were having another round of leadership workshops. And I got in for that and my principal was really supportive. He was amazing throughout this process. He was like, all the way through. I know some people have issues with like administration sometimes when they make a big change.

And we was just like, you know what's best. You know what's best for how to teach physics. I trust you completely to do this. They --Bates college--gave me a big grant to buy all the computers and equipment, the iMacs, back in the day. And all the, I think they were Ulli originally. And then upgraded to the Lab Pros at some point and you know, I think it was really tying together the equipment and the way that it could be used really productively to get students to understand things on their own that connected me with the modeling because when we first went through the workshop and I saw how they could derive kinematic equations from the lab, I was sold.

Jeff Steinert (11:16):

I mean, that was it. You know, it was like, oh, this is the way to go. I don't have to stand at the board and tell them stuff. We can do it from the lab data, from the results of their own experiments.

Mark Royce (11:31):

Yeah. That's awesome. So tell me other ways that the modeling instruction, as you learned it, improved your teaching in the classroom.

Jeff Steinert (11:40):

Well, I learned mainly to shut up and listen, <laugh>, that's pretty much it, the only way, you know if students understand it is if they get to talk about it instead of you.

Mark Royce (11:50):

Right.

Jeff Steinert (11:51):

I can talk all day. I got really good at doing problems cuz I did a lot. Now I do one, two problems in a unit, kind of as like model how I want them to structure things so that they're being complete about things. And then, all right, the rest of it is you, you guys are gonna show me how you solve the problems you're gonna explain it to each other.

Mark Royce (12:22):

Yeah. So you've been modeling for 24 years now, I think is what I read is that right?

Jeff Steinert (12:28):

Hard to believe. Yeah.

Mark Royce (12:30):

Modeling for 24 years. There's not a lot of people around the country that have been doing it that long, but that's pretty cool. You got in early and beyond that, you've been teaching modeling workshops to other teachers who are exploring and finding out about modeling. So here's my question: What insights have you gained? You've taught over 20 workshops in the last years. What insights would you say you've gained the most after doing the workshops for that long a period of time?

Jeff Steinert (13:09):

Well, I think the first benefit is when I lead a workshop, it's like teaching all of mechanics over again. So I am, I've actually, you said I've been modeling for 24 years. It's more like 44. Because <laugh>, every time I do a workshop, it's like another year under my belt.

Mark Royce (13:34):

Oh

Jeff Steinert (13:35):

And the teachers are sometimes the best students because they have insights, you know, especially those that have been teaching for a while and can really see why the modeling works. They have insights into things that my students don't 'cuz they're taking physics for the first time. So I've had students ask me or teachers ask me great questions as we're doing it about the whys and well, what if you did this instead? And those are things that I end up often, including in activities that I create in the classroom, you know, that are maybe a little different or completely in addition to the typical modeling curriculum that's in the materials that are published and we use with the participants.

Mark Royce (14:34):

And in the resources that are available online, like at the, AMTA site and that kind of a thing.

Jeff Steinert (14:40):

Yeah. I mean a few of those things that, I know I've created and some other people like Mark Schober have made their way into there. Sometimes I don't even know how it happened, but that's fine. I mean the best stuff is the stuff you steal from someone else is kind of how I figure it. Cause if it's good, it's good. Yeah.

Mark Royce (15:06):

And the whole modeling community tends to just disseminate information to each other from wherever the information is found. That's very cool. So I read, ...this is a different question, different direction... I read that you've done some research on analyzing the scores on concept inventories, like written some papers or done some stuff. Can you tell us a little bit about that and what you learned through it?

Jeff Steinert (15:40):

Yeah. That, was something that started about 20 years ago. I'd read a paper by David Meltzer, I think it had to do with hidden variables in student gains on the force concept inventory and he felt like, you know, the mathematics ability of course, was like one of those that you don't typically measure ahead of time. But you know, that the kids that are good at math have the tools to be able to solve equations and things like that. So they're spending less of their working memory on remembering how to rearrange an algebraic equation and more about thinking about like, should this be positive or negative, which is often a really key thing in solving the problem. So, I looked at a couple of things and there was something else and I don't remember why it popped up.

Jeff Steinert (16:47):

It might have been something I was reading by Robert Karplus, but I ran across Tony Lawson's classroom test of scientific reasoning. And that summer he came out with a multiple-choice version. And so I gave both a math test at the beginning of the course and the classroom test of scientific reasoning. And the FCI of course, and then at the end of the course, the posttest FCI. And so, the math tests, it was so hard to score in any way that made any sense. I don't think I ever did anything with it honestly, but the classroom test of scientific reasoning, it was easy to score 'cuz it was a multiple choice. Right. You know? So I did that, but I didn't really know how to look at those scores, which is basically a measure of the students' cognitive development when they take the test. So beginning of the year. And the FCI of course measures their gain in conceptual understanding. What ended up happening was I had gathered this data for three or four years and I happened to open up the December, 2005 American Journal of Physics. And there was an article there by Vince Colletta and Jeff Phillips at Loyola Marymount that used the exact same tests. I was doing the Lawson test of scientific reasoning, and the FCI and they'd analyzed it, and so I was like, holy, like they have like 99 students in their study and I have over 200 in mine. So I just did the same thing they did following what was in the article and, and the results were... It was as if like my results like laid exactly on top of there. I mean, there was, there was no difference. That was the really odd thing it was.

Jeff Steinert (19:22):

I mean their first year students at Loyola Marymount college, in Los Angeles and my introductory physics students in Auburn, Maine, like we couldn't get farther apart in the continental US, I don't think either. And yet we were seeing the exact same thing. And so, well, you know, I give all the credit to Vince Coletta cuz he's the one that figured out how to analyze this. And you know, I I've just been sharing data with him ever since. And he's been kind enough to put me on as a co-author for what he's been publishing. I mean sometimes you're just in the right place at the right time. I think we already talked about that a couple of times. Yeah.

Mark Royce (20:15):

So what outta that do you think is most important for our listeners to understand about that research?

Jeff Steinert (20:22):

Often we tend to try to evaluate our teaching based on what our students have learned. And the Force Concept Inventory is a fairly straightforward way to do that. There's a lot of research about how, what kind of gains students make under traditional instruction and under interactive engagement processes. Richard Hake wrote a paper back in 1996, 98, somewhere in there. That compared 6,000 students. There's another variable in there though. David Melter was right. The other variable is what's your student's cognitive development because, going all the way back to the work of Char and AD in England in the 1980s, um, if you can improve a student's cognitive level, they're gonna get more out of every course they take because -- doesn't matter what the subject area --they're gonna be able to process at a higher rate, they're gonna be, they're gonna reflect on their own learning.

Jeff Steinert (21:33):

The whole metacognition only happens when you get to a certain level. So knowing where your students are in their cognitive level, really gives you some idea about like what you might expect to see for gains on the FCI and how those would compare. So if you look at the physics teacher article that Vince and Jeff and I published in 2007, it's split up into quartiles, like where the students started in terms of their cognitive development and what kind of gains we see in each of those quartiles and they clearly go up as the students' Lawson test scores go up. So, I use it every year. It gives me an idea at the beginning of the year, which students might struggle a little bit too. Students with lower Lawson test scores are gonna struggle more with making sense, bringing, you know, one things about physics is it all makes sense, but it really can only make sense if you have the cognitive ability to make sense of it and not be spending all your working memory, trying to understand the words or the math, or whatever it is, but you can spend it on the concepts and really it has to bother you when there are inconsistencies.

Jeff Steinert (23:18):

And yeah, until you get to a certain cognitive level. Oh well <laugh>, it just doesn't bother you. Right?

Mark Royce (23:27):

Right. Wow. Yeah.

Jeff Steinert (23:29):

The three-year-old thinks it's magic when certain things happen. And then they start looking for the thing you hid behind your back. Usually it's at about one, right?

Mark Royce (23:44):

I want to ask you. There's a phrase when I read your bio that I didn't understand. And I know you're pretty good at this and I don't understand the phrase and maybe our listeners do 'cuz they're mostly science instructors too, but you use the term hacking paradigm labs and I don't know what that means. Can you help me understand that and perhaps expand on it for our listeners as well?

Jeff Steinert (24:13):

Sure. Paradigm labs is like, at least in my workshop, I'm not sure how much I use it in the workshops I lead, but those are the labs that we begin each unit with.

Mark Royce (24:25):

Okay.

Jeff Steinert (24:26):

So, that basically from which we develop the concepts that we then deploy and use throughout the rest of the unit. It might be what I call the ramp lab where the carts accelerating down the ramp and we're measuring displacement, velocity and velocity versus time, and looking at those graphs.

Mark Royce (24:54):

So you talk about hacking those labs.

Jeff Steinert (24:57):

Right. So this goes back to like going to that lab where Ron Thornton's like got the first motion detectors it's -- I think it was like 15 years ago, Nick Cabot was doing his doctoral thesis and he came and visited for a week or two in my classroom. You don't often get the opportunity to talk with anyone else that does modeling when you're the only physics teacher in your building. Right? So, Nick and I were talking and I think it was the, it was the Atwood machine lab where like I'd learned it by, you know, you have a force sensor or you're moving masses from the cart to the end of the string and every time you ran the thing, you'd get one data point. And then you'd get another data point like 10, 15 minutes later.

Jeff Steinert (25:57):

And it would take two and a half days to collect enough data to graph. And by then students have forgotten what they're doing. So I just had this thought. I was like, what if we just put a force sensor on a cart and a motion detector behind it? And I could add some masses to the cart and I can just grab the force sensor and push it back and forth in front of the motion detector. And we can graph force versus acceleration. What happens then? And we did it and we got this graph, and the slope was the mass of the cart. And so it was like F equals ma or, and the whole lab took to collect the data, took them about 10 seconds as opposed to... So the idea was to find ways that we can get really good data.

Mark Royce (27:02):

Yeah.

Jeff Steinert (27:03):

I mean, take advantage of the technology. That's kind of, you know, we don't have to be moving masses from the end of the string onto the cart and back, back and forth. Like we did back in the sixties when I did, you know, or the seventies when I did the lab in my high school physics class.

Mark Royce (27:23):

Right, right. Cool. Something else that you mentioned that I know a lot of modelers are keen on talking about and developing is having a storyline that in your teaching that carries from one unit to another, as opposed to just isolated, you know, lessons. Talk to us about that and how important it is in your classroom and how you developed that, how you create that storyline.

Jeff Steinert (27:58):

Well, I think creating it was-- it's like been decades kind of its it's like... It's not like I saw this story at some point and like said like, that's it. But little pieces of it come in all along. I mean, part of it is there are certain concepts that return every time, like this idea that when things are accelerating, they can be speeding up or slowing down or changing direction. So those are things that cycle back a lot. So, when we first do the kinematics, when it's speeding up the acceleration's in the same direction it's moving, when it's slowing down the acceleration's in the opposite direction that it's moving. And then when you move to add forces to do the explanation for why things are happening, the idea that there's an unbalanced force in the direction of the acceleration, they can still look at an object and recognize, oh, it's moving to the right, but slowing down. That means the acceleration and the unbalanced force are to the left. They're just adding a new thing on to what they've already learned as they do that. And it also reinforces what they've already learned, all along the way. So, I mean, that's one thing. I also like students to tell the story rather than me, whenever possible. So when we get to the end of a unit, sometimes it's really obvious where we're going next. Like we did constant velocity. What do we do next? The students are like, yeah, not constant? Okay. At some point we're like, well, we've described motion. Would you like to know why it happens? Let's go from the kinematics to the dynamics, the whys, and you know, I think that's the kind of storyline I'm talking about.

Jeff Steinert (30:34):

And then we go from straight line motion to, non-linear motion. Projectile, circular motion, those kinds of things, which, are a natural progression. More complex, more stuff going on, but the concepts are not a big step forward. They're just like, when you go to projectiles, now we're talking about constant velocity horizontally, which they've already done constant velocity and constant acceleration vertically. We're just combining those two together. And when we get to circular motion, since they already understand, hopefully, Newton's second law, we're just applying it in a little different way. It's not F net equals ma. Well, it is, it's just, there's a special form for the acceleration. It's V squared over r. You can't get it using kinematics, cuz the object's not speeding up or slowing down. It's changing direction. And so, from the results of their lab, they've discovered that the acceleration is the speed squared divided by the radius. They can just go right into using that as the accelereration when an object's traveling on a curved path.

Mark Royce (32:08):

So that storyline helps inform how you develop your curriculum for the year.

Jeff Steinert (32:14):

Yeah. I have changed the order in which I do things. So I used to do projectiles earlier before forces. But I moved them to afterwards. Mainly because I think it's easier to explain the why. There aren't any sideways forces, so the projectile goes sideways at constant speed. But there is this force we can't avoid of the earth pulling down. So of course it's gonna accelerate down all the way through.

Mark Royce (32:56):

Here's a question.

Mark Royce (32:59):

What's a secret that you've learned since starting modeling that you wish you'd known before starting modeling?

Jeff Steinert (33:07):

I think it's probably that teaching students a process is okay. That like modeling for them a process, even writing down steps along the way. So how do you solve this problem? One: make a diagram. Choose positive and negative directions. Two: write down your knowns and unknowns. What do you know? Three: figure out what the model is you're using? Is it accelerating? Is it moving in a circular path? What's going on here. And then, how do you employ the model? Explain what makes sense here to use and why it makes sense. And then when you get to the end, figure out if your answer makes sense. It's not just a number. Hopefully with units. The plus or the minus means something the, like how big it is.

Jeff Steinert (34:19):

I try to make my problems realistic. Every once in a while I screw up and I'm like, whoa, that's way too big. But I try to make 'em within the realm of possibility. Yeah. So I think, and I think that's it. I read an article recently and I can't remember who it was by. I think it was about teaching chemistry and physics, that it's good for students to actually have algorithms for doing things because when they're learning the concepts, they have a limited, I mean, we all have a limited amount of working memory all the time, but when they're learning concepts, they need more of their working memory for those concepts. They can't be figuring out process at the same time, but if they practice the process while they're applying the new concepts and the process is laid out for them on paper. It's also why we tell 'em you can't do this in your head. Start writing because I can't do it in my head either. Okay.

Jeff Steinert (35:33):

When experts have these big pieces that they automatically-- it's an automaticity kind of thing. So, I look at something, I go constant acceleration. I can use kinematics. And that just means something to me. To my students. It's not one chunk, it's still smaller pieces. So it takes up more space in their working memory. I have more room for looking at the other things than they do. And that's the other thing. I think out loud. So when I'm doing the one or two problems during the unit to show them the structure, I'm talking, like, I'm saying what I'm thinking, I'm not just doing the problem. I'm explaining like, oh, I'm doing this because I know this is true and this and this. And then I'll ask them questions, you know, to get them involved in thinking too about what's going on.

Jeff Steinert (36:40):

Should I make this positive or should I make this negative? Which is it, you know, is it speeding up or slowing down? Which way is it moving? So, I think those things are things that you learn through experience that the process is gonna be something that takes more time for them to learn if you don't give them kind of a guide at the beginning, like do this, then this, then this. Right. But once they learn that process, then they're able to branch off and say, oh, like, then you can start asking questions. Well, what if we did this instead? Then what would happen? And it doesn't like just completely overwhelm them and blow their mind.

Mark Royce (37:28):

That's great. So are there any like specific tips that you give to modelers who maybe who are starting out or those who might be looking for more information from an experienced modeler like yourself? Any great tips that you wanna share with our listeners?

Jeff Steinert (37:53):

I think there's a couple of things. One would be, if you're not a member of like AAPT like look at the journals, like the physics teacher and the American journal of physics, even if you just look back through, sometimes they have resource letters that give you insights into what research people have done about physics education, like how students learn physics because those things, sometimes they're like, you know, way up, a little higher level than I can use, but there are often things in there that are really great and I've invented like whole activities, from certain papers. I remember there was one by, I think it was Lee Bao and Dean Zulman and Kirsten Hogg, maybe that was about Newton's third law. And they had some great images in there and I just made a whole force pairs activity that I used for a couple of days with students.

Jeff Steinert (39:03):

And it gives, 'em a really good insight into that. So don't be afraid to read the things. And I think some of the more recent research into gender equity in the physical sciences is really spot on. There's an article by, Miyaki and a whole bunch of other people. I don't recall everyone's names at, I think it was the university of Colorado that had to do with values affirmation using a values affirmation for students at the beginning of the year. It only takes like 15 minutes. And in their study, it completely erased any differences in outcomes in terms of physics learning during the physics course, which was like completely at odds with the control group. And then, the whole idea of self-efficacy and promoting that, that especially among female students, Vashti Sawtelle, who was a graduate student at Florida International University when I first met her, she was in one of my workshops long time ago. She's at Michigan State now, I believe, and doing like really interesting research and how modeling instruction, promotes self-efficacy among women in the physical sciences.

Mark Royce (40:47):

Right.

Jeff Steinert (40:48):

Um, so there's a lot to be said, my students are 70% female, so this is really important to me. We are a vast majority female school.

Mark Royce (41:03):

I know you've mentioned that it's important not to feel like you can't invent for your own classroom, the methods that you're using. Can you expand on that a little bit?

Jeff Steinert (41:15):

If you're a teacher, you know your students better than anyone else. Everyone's situation is a little different. There are times when you'll modify something just for like one student even. Like you might have a student that's way beyond everyone else, or that's struggling and the modifications would look different for those two students, of course. But you do things based on like who you have in the room, I think has to be the bottom line for any class. And sometimes it's different from year to year. So, having that ability to speed up or slow down if you need to, reteach something when it makes sense. I think it goes back to that idea of listen to the students, try to get them to ask questions of one another when they're white boarding.

Jeff Steinert (42:24):

I try to like back off as the year goes by, you know, so there's always kind of in the middle of the year, when clearly this group has done something that's not correct. And you can feel that there's a couple of students that are uncomfortable, but they're not asking anything and I'll just-- I'll wait and wait and wait, and I'll go like, all right, well, let's look at the next problem. And then they'll be like, somebody'll go. Um, um, I didn't get that. I was like, yeah, well, they didn't speak up. What do you have a question? Ask it? I don't wanna always be the one that says, like, why did you do this? Or like, I want them to, to be the ones that come around to doing that by the end of the course.

Mark Royce (43:14):

Yeah. That's great. Well, Jeff, it's been awesome talking with you. I have enjoyed our conversation very much, and I think that your insights are really valuable and your experience. Are you teaching a workshop this summer? Are you heading, are you gonna be involved with workshops this year?

Jeff Steinert (43:34):

Yeah, I am. I'm co-leading the mechanics workshop at Arizona State this summer, June 6th through 24th.

Mark Royce (43:47):

Okay. Sixth through 24th. That's awesome.

Jeff Steinert (43:49):

My co-leader is, Melissa Girmscheid. And she's done computational modeling workshops. I've co-led with her before online. Awesome, awesome modeler. I'm really happy to be working with her.

Mark Royce (44:04):

We did a recent interview with Melissa not too long ago. So if you're interested, you can go listen on our website at sciencemodelingtalks.com. Yeah. And this will be posted there and people can hear this episode as well as check details about you. We'll post your bio and a few other things, information about you. And if you're interested in Jeff's workshop, you can go to the AMTA website and find out a lot more there. Modelinginstruction.com and find out more about when it is and how to get registered and that kind of thing. So well, Jeff, I wanna thank you very much for taking the time outta your busy schedule, to talk with me and to share with our listeners the insights that you have had. It's great. Great to talk to you. Appreciate it.

Jeff Steinert (44:59):

Thank you, Mark. I really appreciate it too. Model on.

Mark Royce (45:04):

<laugh>. Yes. Model on.