Mark Royce (00:00):

Hi, Dwayne.

Dwain Desbien (00:00):

Hi, Mark.

Mark Royce (00:01):

How's it going?

Dwain Desbien (00:02):

I'm going good. How about yourself?

Mark Royce (00:04):

I'm doing well, thank you very much. It's a little cold out here in California in the Central Valley. We're socked in with overhead clouds and fog, and it's kind of cold, so <laugh> for us anyway. And you're in Arizona. Well, how's it going there?

Dwain Desbien (00:22):

It's a little chilly for us too. It's only 48 Fahrenheit this morning, so for us that's pretty chilly here in the Phoenix metro area.

Mark Royce (00:29):

Yeah. Yeah, it is. Oh, wow. So you're teaching, what's the school you're teaching at right now?

Dwain Desbien (00:36):

I'm in my 22nd year at Estrella Mountain Community College, which is on the west side of Phoenix in the metro Phoenix metropolitan area in the city of Avondale.

Mark Royce (00:47):

Ah, okay, cool. 22 years.

Dwain Desbien (00:50):

Yeah.

Mark Royce (00:51):

Wow. That's a good long time. So, I know that besides teaching at that college, you're also involved with a lot of research and development of curriculum for others who are, especially for those who are in college and university settings. Tell me a little bit about your work there and the research you're doing.

Dwain Desbien (01:16):

Well, I've been part of, a PI on multiple grants that have provided professional development and or curricular development, particularly for community college, but also some high school to be honest. Our last two grants that we worked with, I worked with a gentleman named Tom O'Kuna out of Lee College in Texas. We actually were for both community college and high school faculty, we did curricular development. We did professional development on everything from coding in your classroom to actually writing more interactive-based labs on better pedagogy, to just teaching classroom management skills, to using alternative tasks such as TIPERs, tasks inspired by physics education research, which include things like ranking tasks, what, if anything is wrong tasks, things like that. And we held three-day workshops for that for about 11, 12 years. And that was actually a continuation of a project that originally had started with Kurt Higlike and Tom O'Kuna back in the early nineties, which is actually how I got into physics education research at all.

Dwain Desbien (02:21):

Then just this summer, through the American Association of Physics Teachers, we actually put in a grant to create an organization called Optics, which is the, I can never remember the acronym, but it's for two year college physics faculty, through AAPT to provide professional development for seasoned faculty, for new faculty for, DEI training and all kinds of different things like that. And everything from also doing a survey of community college faculty across the country. So we actually have a better feel for what is being done at community colleges because there isn't really a large historical data of what has happening at community colleges like there is at universities and high schools. Cuz the AIP, American Institute of Physics actually provides and does a high school survey of physics quite frequently and does one for colleges and universities annually.

Dwain Desbien (03:18):

There's only been two in the history of community colleges done. And one was funded by Tom and I's Grant about 13 years ago, and that was the last one. Wow. So it also includes funding for a new one of those to get a better idea of what's actually happening in the community colleges because, you know, 13 years ago we found out that the majority of students of color and or of underrepresented groups take their physics actually at a community college at the college level, not at university. And so we're really wanting to see if that's changed or if it's still the same and how we can impact and do those things.

Mark Royce (03:52):

Yeah. So tell me a a little bit about some of the results you're finding and the effect that you're having in those studies and research projects. What's going on there?

Dwain Desbien (04:06):

One of the things we've found is that we can have large impacts. What I mean by that is we've had community college faculty changing across the country. We've changed many of the high school teachers, in terms of what they do in the classroom. And to be fair, it wasn't that we were doing so much true research for publishing as we were trying to do professional development and change how classrooms are managed, utilizing other groups as research. What I mean was like the TIPERs as an example, that was instigated by Steve Keim out of New Mexico State, who's now retired, along with David Maloney, who's at Indiana Purdue, Fort Wayne University, I think I got that right. And some others. But doing things like that to try to really bring those tools. Modeling as an example, my PhD was in physics education research in terms of classroom management.

Dwain Desbien (05:01):

How do we manage the classroom better with a research-based curriculum to actually improve student learning? What kind of things would that be? So most of you who've been through a modeling workshop, if you've gone through and done what's often called the board meeting or the circle, that was actually a growth out of my PhD research, my dissertation. That was something I actually brought in to the modeling curriculum. And so, those were the things we were trying to get across to the folks and trying to get them to implement in their classroom and to help them understand how they can assess their classrooms, you know, utilizing the tools such as the FCI or the CSEMs Conceptual survey, Electricity and Magnetism that are out there, and how do you utilize those correctly in your classroom, not just, you know, there are people that give those for grades and of course they were never intended to be for grades.

Dwain Desbien (05:52):

They were purely about how can we improve as teachers. And sometimes getting administrators to understand that and getting us ourselves to understand that sometimes that, like on the CSEM, your students average a 40%, that may be a very good result. And teachers as us, you see a 40% result and you're like, oh my God, I failed miserably when it may be that that was actually a very good result because a typical university class will only average probably on the neighborhood of 50% post-test, you know, from like a Harvard or a Yale. And so, you know, you're getting a 40% in your high school or your community college, that's a great result. Yeah. And getting them to understand that and to be a little less harsh on themselves.

Mark Royce (06:38):

Yeah. You mentioned about that you had helped introduce the idea of the board meeting in the classroom using whiteboards. My wife told me that it was you that she discovered board meetings from, and that it really transformed her classroom experience and the involvement with whiteboards and how it became most effective. So tell me a little bit about how that, I know it's been a while for you, but how did that come about for you that you developed the idea of the circle around and have a board meeting? Talk to me about where, where that came from.

Dwain Desbien (07:16):

It was actually a class I had taken at ASU, from the education department taught by Michael Pyburn. One of the things that we read in the classes and the research we were reading about in that class talked about how if we can break down any barriers to student-to-student interaction, that that is going to create the best classroom discussions that we can have. And so, one of the things that I was teaching at the point at a community college adjuncting while I was doing my PhD, called Chandler Gilbert Community College here in the Phoenix metropolitan area, and they had an open space in the middle. I'm like, okay, so why are we having students presenting their boards from the front where they're classes where they can be distracted, you know, working on their own boards? Why not put 'em in a circle where they're all at the same level, they're all at the same height, the whiteboards are all visible so they can ask each other questions about different whiteboards.

Dwain Desbien (08:08):

And it grew out of that, and it really was that first time I put 'em in there and, you know, and started looking at what the research said about okay, because yes, you've got 'em all at the same level. There's not one group up presenting. They're all equal. Everybody's whiteboard is visible. So if somebody sees something on somebody else's whiteboard, it's much easier to have a discussion. It's much easier for students to hold students accountable when they can see. It's much more difficult to hide behind your whiteboard or hide behind your phone and not be a part of the conversation when you are in that circle.

And that really was the impetus when I saw one of the many things I tried to do with my dissertation and the research I did for that take off and really start to see improvement among my students and really seeing the classroom discourse improve dramatically.

Mark Royce ([08:59]):

Hmm. That's awesome. I am impressed with how that has evolved over the years here and that's a great contribution you made. So, so tell me, when it comes to you in the classroom, what would you say are kind of your personal specialties as a teacher in the classroom?

Dwain Desbien ([09:24]):

I would say probably one of my biggest specialties is the ability to, what I defined in my dissertation is called seeding. The idea of seeing a group struggling with something or working on something and planting an idea, just seeding an idea to them and being able to walk away and see how it grows. And that's a very challenging thing because you can't just give a hint. It has to be the right hint. It has to be phrased the right way to that group. It has to be planted. You can't, you can stick around too long after you plant it and you, my term is over-water and it drowns. Or they just take you for what you say. You have to be able to plant an idea and seed an idea so that when it comes to the group discussion, that it seems like it was that group's idea, because it's much more likely to be questioned by their other groups and or, you know, argued about by the other groups if they don't think it was from Dwayne.

Dwain Desbien ([10:17]):

Because if it was from Dwayne, then they're just gonna kind of accept it. But if you can plant that seed and get that group to take it in and bring it, make it their own, so they bring it to the circle and then they're defending it, not you, not me, it makes it a very powerful thing. So that's one of the things I think that I do really well is that classroom management, which does mean that you're thinking on the fly. You can't have the notes prepared, you can't have the lesson plan completely prepared for how that class is gonna go. And so it's, it's a version of just in time teaching. And I know that means something in education different than I'm meaning it, but I mean it that I walk in into a classroom with a general idea of what I want to do that day. I don't even have prefab problems. I literally am doing the class on the fly as I go based on the classroom discussion and how the class is going.

Mark Royce ([11:12]):

That's awesome. I am most familiar with modeling in the high school settings. Can you talk to us about kind of how modeling is different and how it fits into the university college settings?

Dwain Desbien ([11:28]):

The core principles are exactly the same that, you know, the physics is based on a small subset of models. The particle model, the extended body model, the rigid model, the constant velocity model, the constant acceleration model. All those things are still the same. There's nothing different there. Probably a couple of the differences in terms of, things is most of my classes, I teach the calculus sequence, primarily. And what that means is that they're a little better prepared than the average student. So they're not, they have to take it. I don't end up with students that are assigned to take physics. Okay. I do teach a conceptual physics class, which is actually probably my favorite course to teach, which would be closer to the high school, in terms of the student capabilities and so on. But one of the things I've found is that there isn't a lot of differences. And I've had this discussion with many a high school teacher, they think, well, you teach college students, they're so different. I'm like, yes. They, they definitely matured between August and May <laugh>. Okay.

Dwain Desbien (12:36):

Okay. Um, no, they're exactly the same. The only difference is we don't have any parental oversight and so on. But in terms of the curriculum, I don't necessarily follow the high school curriculum, you know, the modeling curriculum per se. But the tenants, the ideas, the idea of what science is, and it's based on the models. You develop a model, you take it as far as you can go, and then you add complexity to it as you need, not just because you want to, there's a need. You run that model to its limitations and understanding what the limitations of those models are. And a lot of times when I've run a modeling workshop and whether this is for high school people or college folks, is I ask 'em the same question. And it's a great question to really get them to understand that sometimes they don't even fully grasp the model themselves.

Dwain Desbien (13:23):

So if I take a particle, and another particle, they both have mass and by the way, the definition of particles, something has no size, but has mass and or charge. And I dropped one through the air and one through water. So I have a column of water that's one meter high, I have a column of air that's one meter high, and I drop a particle through both which one hits the ground first and just listen to both the teachers and the students struggle with that question. And the answer of course is they hit at the same time. And, you are very seldom will get teachers to get that right at the start, because they're start well, water's more resistive. It's hard, but it's a particle. It has no size, so therefore it displaces nothing. So therefore it's gonna fall just like it's through air and actually understand the limitations, the assumptions that are built into these models that sometimes they haven't fully developed either.

Mark Royce (14:14):

Right. Interesting. We'll be right back to the interview, but I want to encourage you to check out The AMTA's Meet a modeler series on YouTube. You can learn about featured modelers by visiting the AMTA YouTube channel at youtube.com/c/AMTAteachers, that's youtube.com/c/amtateachers. This is a great resource to use if you're leading or taking a workshop or modeling course this summer. Now, back to our interview. Are you finding, are you getting students coming into your classes that are, have been introduced to modeling instruction in high school? I'm kind of curious about the percentage of students who are coming in these days that have been exposed to modeling methodologies.

Dwain Desbien (15:14):

10 to 15 years ago, there were more coming in with modeling as the background. From their high school teachers.

Mark Royce (15:20):

Interesting.

Dwain Desbien (15:21):

But out here on the west side of Phoenix, which is one of the big growth areas of Phoenix, so many of those teachers, went on to better paying institutions than the west side of Phoenix. And so, almost all the newer, almost all the teachers that teach physics out on the west side of Phoenix are newer. There are still a few pockets. David Worth is an example, who just recently retired, retired as the national teacher of the year through, ASU and some of the other thing through AAPT and one of their programs. But it was really nice because all of his students would come and I'd have them, and so we would have some background with them. But unfortunately, so many of those teachers have moved on and we don't, they don't have the background at this point. It doesn't mean they won't, but it's, and several of the school districts also made the push that they wanted to do AP and of course when they did AP, they forced them out of the modeling because that just doesn't, in some regards, those are not compatible. And my opinion aren't compatible at all, um, in terms of you want to do a good job because you're teaching what the AP curriculum is supposed to be so they can pass the AP test as supposed to necessarily learning physics.

Mark Royce ([16:32]):

Interesting.

Dwain Desbien ([16:33]):

But that's a bias of mine. And I'll acknowledge that upfront.

Mark Royce ([16:37]):

Okay. <laugh>, it's okay for you to have biases <laugh>. So, one of the areas that you have focused on is the idea of alternative problem solving techniques. Tell us about that and what your study and your insights are.

Dwain Desbien ([16:59]):

Would love to, because that's actually one of my favorite topics. I will tell you that one of the biggest things that stuck with me that David Hestenes ever said to me personally or to most workshops when he'd used to go into those was that most physics faculty, and he was speaking about high school, college, or otherwise practice what's called vector avoidance. They try to do anything to avoid using vectors. And one of the things that that really said was that they needed to be able to do vectors. And even in the modeling curriculum, in my opinion, all too often the first thing we do when we see a vector is we break it into its components X and Y. So we're dealing with scalars again. And so with that, I really started thinking about a: how can we utilize vectors to actually solve things and more in particular, how can we use all these graphs we're doing?

Dwain Desbien ([17:50]):

So we're doing kinematics graphs at the start of the semester. You know, you're doing velocity graphs, you're doing acceleration graphs, and we talk about them, we talk about the slopes of them. You look at the slope of the velocity graph that gives you the acceleration. You look at the slope of the position graph that gives you the velocity and so on. And then of course, the area under a velocity graph tells you about the change in position. The area under acceleration graph tells you about the change in velocity. But I really... I'm gonna tell a story about myself just for fun. I was teaching a honors class, with Mike Palatano, who was a research assistant for David Hestenes at the time at ASU when I was working on my doctorate. And what that meant for me is I was a glorified paper grader.

Dwain Desbien ([18:33]):

I got to grade the papers and, you know, he did all the good stuff. But I remember a student turned in a homework assignment where all he did was use utilize the area under the velocity and acceleration graph to solve all the problems. He didn't do the kinematic equations at all. You know, the typical X equals X zero plus V zero T plus one, half a T squared. He didn't use 'em at all. He just did areas under velocity and acceleration graphs. And by that, he turned a ridiculously hard problem into a trivial one. Okay. It's a kind of a famous one in modeling at some level called the Rocketeer problem. But what I found was, I had struggled to do it, the algebraic way myself as the grader. You know, I get this little 18 year old kid doing, I should be fair, he was only 17-year-old kid who did the whole problem in like a half page.

Dwain Desbien ([19:25]):

And it, you know, kind of disgusted me that I didn't think of that. And so actually talked to the student and said, how did you think to do this? He goes, well, we're doing all these graphs in lab and, you know, and discussions they had to be more useful than just that. And so I started looking into it and realized that I could do almost all of the kinematic problems that were offering students that were giving to students by merely using geometric shapes the area under the velocity graph and the area under the acceleration graph to solve it. All the equations, no memorized equations come from finding the area of a rectangle and an area of a triangle. Because in a constant acceleration model, those are the only shapes you can get. So if you have a velocity graph that's going up positive slope, you're either gonna have a triangle or a triangle plus a rectangle, and utilizing only that idea, you can solve almost all kinematic problems easier than the algebraic way.

Dwain Desbien ([20:23]):

And that was something that struck home to me. I'm like, okay, so how far can we extend this? Well, then you start talking about Newton's third law and you know, the force on one object is the same as the force on the other object describing the same interaction, but equal and opposite. Well, those graphs force versus time look exactly the same. So the area under one equals the area under the other. Well, that leads directly to conservation of momentum. So the idea of utilizing these graphs to do that was really powerful to me. And to this day, I don't teach kinematic equations. My students never see the standard kinematic equations because we do everything by areas under velocity and acceleration graphs. Now what that really means is they're doing calculus because that's really doing an integral. So I'm teaching students, whether they're in conceptual physics or calculus based physics, to do it all from first principle integral basis as opposed to some equations that they've memorized.

Dwain Desbien ([21:17]):

And it really helps utilize some really neat problems that way. The other thing that I introduced was what I call goalless problems to these kinds. What I mean by a goalless problem is there's no question asked. So, you know, I might walk into the classroom and say, I'm gonna drop this marker from two meters high. Tell me everything you can. Go <laugh>. And so based on the physics they've learned at that point, there are certain things they can extract from that and will revisit that problem throughout the semester as they learn new tools, learn new models. Okay. Let's revisit that marker dropped from two meters. What can you tell me now?

Mark Royce ([21:55]):

Wow. Okay.

Dwain Desbien ([21:55]):

Yeah. And so in other words, instead of a: how fast is the marker going when it hits the ground? B: how long does it take to hit the ground? No, I dropped the marker from two meters go <laugh>. Okay.

Because it opens it up much more. And then when we do like two-dimensional motion, and that's really where I get into the idea of teaching students to use vectors and vector addition to solve it. Because then again, it turns into a triangle. And this case you're using trigonometry to do it to solve the problems. And many of the two-dimensional motion problems that we struggle with getting our students to understand, such as you shoot something off a top of a hill and it lands at a point lower than it started, which using kinematic equations can be very troublesome to students. Doing it using a vector approach, truly a vector approach where it's V zero T vector plus one half a t squared vector equals delta r, change in position, vector turns it into a triangle that you can solve using triangle right triangle trig, or in some cases you have to do the law of sines and law of cosines.

Dwain Desbien (22:57):

But again, it's almost always simplifies the problem to a point that it's easier for students to actually do the mathematics and focus more on what's going on. And so those are two that I've really approached hard that way. And so yeah. Sell to my students.

Mark Royce (23:14):

Yeah. Alternative problem solving. So you, you used the term, I read, problem formats and I didn't understand what you meant by that term. Can you explain that to me?

Dwain Desbien (23:28):

What I mean by problem formats is all too often standard textbook problems or even some of the modeling curriculum problems are designed to utilize a specific equation. I should use this equation to solve it. So I want a problem that doesn't have that as obvious. Some of those need to be conceptual, some of those need to be mathematical. So that goalless problem I had described a few minutes ago, is an example of an alternative problem format. Those TIPERs that I mentioned earlier in a previous answer, which TIPER stands for tasks inspired by physics education research, is an example of alternative problem solvings. It's an example where I have a ranking task. What does that mean? I give the students six physical situations where there are some subtle differences in the givens in the problem, and they're have to rank it based on some criteria.

Dwain Desbien (24:19):

So very simple example is, I've got six balls and I'm dropping them all from the same heights. And they have different masses rank them based on how fast they're going when they hit the ground. Okay. And you can vary what things you give them and so on. And in doing that, you can start probing, do they truly understand that mass doesn't matter? In that case, if you're using energy and you're dropping particles, and so you can probe it. So that's an example of a ranking task. There's what, if anything, is wrong problems. Sometimes the idea is you give a a statement to a problem, like, a ball is thrown and its velocity at its highest point is something --doesn't really matter--but you give the student some statement and then you have a student answer the problem answer. In other words, there's an answer provided.

Dwain Desbien (25:05):

And the students have to critique that answer. Is that answer reasonable? Does it make sense? If not, what is needs to be fixed in that answer? Okay. To make it reasonable. Or there's alternatives again where you have a problem situation, or it could be just a conceptual question and you get three students giving answers and which student do you agree with and why? Or none and why? Or there's what, if anything is wrong problems where you have a situation where you've given it, you get an answer, is there anything wrong with it? If not, fix it or decide. So in other words, you're getting the students to think about problem solving concepts in a way that makes them not just go to equations, but they have to critique, they have to think, they have to decide. And it really forces students to decide, does mass matter?

Dwain Desbien (25:58):

Do I really believe that? Because otherwise you're gonna make that ranking wrong. Then the example I gave earlier of those six balls being dropped from the same height with different masses. Yeah. And of course it does. And so there's, there's a whole series of kinds of questions like that, from the ranking task of what, if anything is wrong, problems to the, who do you agree with? And it's just really fun to throw those out there and force them to go beyond what is very common for them is, okay, here's a physical situation. I apply my model to it, I get an answer. The deployment of the modeling cycle. But okay, critique this student's answer, which has been written to evoke, you know, misconceptions and see if they can find them or not find them. And by the way, one of the meanest things you can do to the students on those, what, if anything is wrong problem is give 'em a problem where there's nothing wrong

Mark Royce (26:55):

<laugh>,

Dwain Desbien (26:56):

Because that's hilarious to watch them struggle with that

Mark Royce (27:00):

<laugh>. Yeah. I know that you believe that teachers should be rethinking what they teach and why they are teaching that. So can you kind of expand on that and explain yourself a little bit on how, how do teachers rethink what they're teaching? How do they understand why they're teaching something?

Dwain Desbien (27:22):

Yeah. That is a deep question that I would love to say I could change <laugh>. But what I mean by that, and what I'm gonna imply with that is all too often we teach things because that's what we were taught. The curriculum that we still teach in first semester physics is still the same overall concepts that were taught a hundred years ago. And the question is, how do we bring more modern physics into this? How do we bring more modern ideas into this? How do we utilize a really good modeling idea and allow us to do some different things with the curriculum? For example, and I'm gonna pick on one that anybody that's known me and had conversation about modeling, okay. The idea of linearization of data. So you've got a quadratic function and we linearize it so we can do the slope and do some things with it, which is a very common thing done in the modeling curriculum.

Dwain Desbien (28:19):

My question would be in the age of graphing calculators, programs that will do all kinds of different things, why are we still spending the time to do that? Okay. When there's other things I think we would better be better served. There is a place for technology. And I will tell you, I don't remember the last time in my research or anything else, that I linearized data to do anything. And I think personally to me, in a lot of cases it obscures what's actually going on. Because if I take a parabolized position versus time graph and I linearize it, it's much harder for me to interpret what's actually going on at a certain time than it would be to merely look at that graph. If I can see it's curving, oh, it's going faster or it's going slower based on how the curve is going.

Dwain Desbien (29:08):

And so that's what I mean about, I think we need to reevaluate some of these things at the ground level up and really question why is it we're still doing some of these things? Why is it important? And an answer sometimes is yes. And in some cases I think the answer could be no. And that would free up time to actually have more in-depth conversations. One of the things that I would suggest, and I do see it creeping more and more into both modeling and in general, physics classes, is the idea of computational physics, doing problems that we can't do algebraically or even calculus-wise by hand. How can we bring real world problems, more realistic problems into the situation by teaching the students some basic coding skills? I think that should be a more important aspect because the real world doesn't have nice constant velocity, constant acceleration, motion problems.

Dwain Desbien (30:05):

We're not really dealing with particles that don't have air resistance. We are dealing with those things and how do we deal with those? The other models are important because they build and help us build those computational models. But until we start making a concerted effort to make that a real part of the curriculum as a whole, I think we're selling our students and their ability short because there are so many coding languages out there that make this much easier than it used to be. I personally use visual Python with my students, and there are other ones that are used, but I use visual python because it makes making animations that the students make trivial. I mean, I can get students up and coding, making objects move and do different things, having all kinds of different forces acting on that I in no way otherwise could in a matter of one class period.And that's an example of rethinking what we're doing. Cause that allows the students to do more interesting problems, more real world type problems. I mean quite simply, the cup drop. If you take a Dixie cup and you drop it, that's not gonna behave and fit any of the models we traditionally teach in the first semester of physics classes. But yet computationally we can do it by building off of those models in particular, even building off the idea what I mentioned earlier, that the area under a velocity graph has a meaning, change of position. Area under an acceleration graph has a meaning, change of velocity. And you can actually argue from those two points very quickly how to actually do the physics of that computational.

Mark Royce (31:48):

One question I have is, you've just presented a whole bunch of very interesting information. If any of our listeners wanted to connect with you or follow you, do you have some kind of social media presence or do you post, you know, your thoughts and stuff?

Dwain Desbien (32:09):

I tried for a while and I really realized that, that wasn't necessarily my forte. I think I even got to all the way to triple digits in Twitter followers at one point in doing some of these things. But I really don't. However, if anybody wants to reach out to me, please do. I'd be willing to have these conversations. I attend almost all American Association of Physics Teachers meetings, the national meetings. Like there's one in Portland in January that I'll be at. So if they're there, come find me, come talk to me. I'll be willing to have that conversation, whether over a beer or just an appetizer or just sitting around.

Mark Royce (32:53):

Do you want to share your email? That was my question. Would you like to share your email with our listeners?

Dwain Desbien (32:57):

Yes, it is actually just my first name. Dwain dot Desbien, at Estrella Mountain.edu.

Mark Royce (33:18):

Cool. Thank you. And we'll also post that on our website that'll go along with this episode. So on science modeling talks.com. And, wow. Dwayne, this has been a great conversation and I really appreciate you sharing your insights and your knowledge with our listeners. I think that a lot of people are gonna be very well informed by this episode, and I just want to say thank you for taking the time to speak with me and to share your thoughts. It's been really great.

Dwain Desbien (33:53):

Thank you for having me, Mark. It's been my pleasure. And if, if you don't mind, I'll leave one piece of advice that I leave almost every workshop I end with, and that's be willing to make a mistake. Don't be afraid to go out and make a mistake because odds are you're not gonna do any worse than just lecturing to your students. Be willing to try something new and fail because at least you're trying to improve for the students.

Mark Royce (34:18):

That's awesome. Well, I hope you have a great rest of your day and I look forward to seeing whatever comes from you in the future. It's gonna be great. So thank you again.

Dwain Desbien (34:30):

Thank you, Mark.