Mark Royce (00:02):

Hi, George. How you doing?

George Nelson (01:49):

I'm doing well. How are you doing?

Mark Royce (01:51):

I'm doing well. I'm excited to talk to you about middle school modeling today and the work that you've been doing in it and the influence that you're having with middle school modelers. So I'm excited to get going on this. First of all, I know you've been doing modeling workshops and involved in modeling instruction for about, I don't know, 7, 8, 9 years, something like that. And you've taught a lot of workshops, but you're still in the classroom. And I want to ask you, when you got introduced to modeling, how did it influence your approach to classroom teaching? What were the impacts of learning about modeling?

George Nelson (02:36):

I realized that there was a big missing piece in my teaching where getting the student, the student discourse, students talking to students. And it wasn't me talking one on one with students, like having a monologue and it was getting, building a community, which I wasn't even aware of yet. And it was just getting the kids to be able to know, to learn science by getting them to interact with their peers, and that being the most important step of getting my kids to actually understand and build on their understanding and give them the skills hopefully, to get them ready for high school.

Mark Royce (03:08):

Talk to me a little bit about your teaching before modeling and your teaching after.

George Nelson (03:14):

So, I have to kind of think back to that time when I was teaching traditionally. I was in Chandler, Arizona. This was like 10 years ago, 10, 11 years ago. And I still remember having these big class sizes, but we we would do a lab, they'd follow the instructions, but then we would have a post lab discussion where it was basically me just putting students graphs or answers underneath a doc cam at the time. And it was me asking kids one on one. And there really wasn't, that wasn't the engagement, the interaction that I really wanted, or it wasn't, we weren't having kids talking to each other. I thought that a good discussion was just me answering questions one on one with the students. And then when I did my first whiteboard discussion at Arizona State, the man's name was Dr. Middleton, he was great. We were doing some kinematics and that really, I really struggled that first semester with not only content, but also just the whole pedagogy and trying to wrap my brain around it.

Mark Royce (04:10):

I'm curious about like what's the best modeling tip that you've learned that you could share with our listeners that you would like wanna pass forward, like this great tip that you've learned.

George Nelson (04:23):

Getting those whiteboard discussions to work? The biggest thing I think is obviously student engaging with your students, engaging 'em in the activities, walking around, talking in small groups. But when you

circle up the Socratic dialogue, the question that you need is the talk science primer that I got from the Michigan Modeling group. Mike Gallagher, Don Pata, Laura Riter, that my practices, those two, I think the to science perimeter is essential for modeling instruction. It has those generic, it shows you the four goals of having to get your discussions, I think, to the level that we want. But it has the great generic questions, so you can put in there and it shows you the hows and whys and some tidbits in there to get those going. And I couldn't, I first ran whiteboard discussions, I didn't have this think the first two years and I was really struggling. And after reading the Talk Science Primer, I think it's the most important thing I've read in science education probably.

Mark Royce (05:16):

Wow. Talk Science Primer. I've not heard of it, but I'm sure maybe some of our listeners have, but can you tell me a little bit more about it? Where to find it, you know, where people might be able to access that info?

George Nelson (05:28):

Yeah, I can send you a link with the PDF for it. It's like a 20 page read, but it's really teacher friendly. And it is, it's from Boston University, I think Sarah Michaels and Kathy O'Connor, Boston University, I think Clark College. But yeah, they also have a Turk project. It's like a video series that goes with that article that you can easily download it for free online. But it really talks you through, they have four, four outlining goals of what is productive talk. And then they talk about, they walk you through how to execute it and these generic questionings. It's funny, I've been with the transition to NGSS, the big push is, getting the kids having these rich discussions. But ironically in the teacher notes, they have these really long detailed like how to have these -- the questions discussions are so scripted that I don't think anyone could really, it's still going back into what the article talks about.

George Nelson (06:27):

The IRE initiates teacher initiates questions respond and the teacher evaluates, which it's not what we want in the discussion anymore. We want the kids talking and sense making. So the talk science primer... I always feel like they've thrown multiple different curriculums at me to trial. And so a lot of the teachers spend a lot of time looking at the teacher notes. And all I do is look at the activity, what's the instructional objective, and then I just know what to use for talk science primer, like the talk, they call it talk moves. That's a big one and I just know how to execute that to get the kids talking to each other. So they have, they have discussion, they have question prompts, generic ones that can fit in almost any section. It's getting students to listen to each other re-voicing, I should really have this down, what the four goals are. Having the kids, their understanding and then, yeah. So, but yeah, it's, it's, it's, if you're really struggling and getting the kids to talk or not sure what questions to ask, I think this is a great read. Good Thanksgiving read.

Mark Royce (07:32):

So George, you've interacted with a lot of teachers through your workshops and so my question is, what do you see in those teachers what their biggest challenge that they're facing? You know, how is morale and enthusiasm among teachers that you're meeting? And how are, are you influencing that in the workshop also? But you know, what do you see as the biggest challenges facing educators today?

George Nelson (08:01):

I think before the pandemic, it was trying to get teachers to transition to NGSS and enhance their instruction with their students. I think now it's, a lot of it is teacher support, classroom management. I think the kids, obviously, I think we're transitioning back. I think after talking to some other modelers, I think this year is going much better than last year with the students and getting them transitioned back into the classroom. And that's, so I think it is like we have with the teacher morale, I think it's, a lot of it is just getting our students back in the classroom and really trying to show them what school really is. I think we had a soft landing for our students last year that didn't, was good and bad, I think had pros and cons. Um, but now I think it's really just trying to get them back in there.

George Nelson (08:48):

And I think with, yeah, I don't think it's a modeling instruction. I don't think it's an AMTA. It's, it's not like, it's not, the modeling is, it's, I just think it's, it's a huge problem that we have in education in general. But I do think when doing modeling well, like I've been doing this for years, it helped me get my kids back in the rhythm of learning, because I think when you're doing modeling well, you can personalize instruction to meet different needs of kids. And, um, yeah, so that's, uh, yeah, just I think this year, although I do, after talking to some other people in the Chicagoland area, they're saying that this year the kids are adapting and doing a better job this year, transitioning back in the classroom.

Mark Royce (09:33):

I think that's been a problem across the US you know, with the pandemic really did put things on hold and kind of got everything off track. Students kind of had a year or more where they weren't as invested in school and the approach to school was different. A lot of people online and it's just a real different approach than face to face. So how does modeling impact a teacher's effectiveness in the classroom, in your opinion?

George Nelson (10:07):

I think it gives you the framework and the structure to create a classroom environment where kids feel welcomed and it really gives a purpose of why we need kids in school. I think when we went virtual, I think a lot of people, and I was saying this before the pandemic and it sounds crazy, but I'm like, if a lot of people were anti- what I was doing in my classroom using the model instruction, getting the student discourse, and I was, and at that point I'm like, well, if you want to still lecture and give them the right answers at the end of the class, I feel like you could get replaced real quickly by YouTube. Like, you don't need someone talking in person. You just need, and then having the, instead of having the written parts, those multiple choice questions that can be scored, it can be all be automated anyways.

George Nelson (10:52):

So I think this is what's best for kids. And I think that not only am I teaching science, I think it's kind of funny as I was at when I was, uh, out with some friends and I was talking to this one guy who teaches math at a prestigious high school in Chicago. And, and we're all teachers. And he said he had the great thing at the end, he said, he's like, we all said what subjects we teach and what grade level. He just said, I teach kids. Like, I think he teaches like, like calculus, but he's like, I just, I teach kids, he coaches baseball and he teaches kids. And I'm like, that's a really good answer. Just we're trying to, trying to get that atmosphere. Really for me it's all just skill building. Like the content in my seventh grade science class, it's earth science, a little bit of life science I think embedded in, there's physical science, but to me, it's like, can we do, can we teach kids how to construct these conceptual fundamental models?

George Nelson (11:40):

Show 'em how to graph, show 'em how to design a lab variables engage, know how to engage with their peers in a whole class discussion, perhaps maybe teach 'em how to do like readings, reading annotations. And then we send them off to the next level. And I think that's what, they, uh, my high school has, it's very intimidating. They have the freshman biology students do a survey on their junior high science teachers. They got like a couple different categories, but the department before I got there, they did not score as, did not get the reviews that they would expect from their former students. But the majority of my students gave me good reviews. The one thing that they don't, the one thing I always get downplayed on is I don't have them memorize. They don't want, they don't, I don't have them the study, like having 'em study every night. And for me it's just get the kids in the classroom. I think we try to get everything done that we can in the classroom. If they're doing work outside of class, it's things make up work or try and go an extra to try to study for, prepare for an assessment.

Mark Royce (12:44):

I know that one of the things I've heard from high school teachers, especially modelers, has been that they don't feel like modeling is introduced early enough to get kids used to that approach to teaching. So when they get to high school and face a modeling classroom, they sometimes struggle getting into the groove of how modeling works and implements in the classroom. But you've been specifically and now only in the middle school arena. Is that correct? And yet you're really working to implement modeling instruction approaches in the middle school classroom. Talk to me about how you do that with middle school. I don't know if you, if you've had any experience in high school classrooms, but, it's interesting to me to to hear your perspective and share with our listeners who probably a lot of 'em are high school instructors, how you are preparing your students for high school.

George Nelson (13:50):

I, yeah, like I mentioned before, a lot of it's skill building. Can they design a lab? Can they understand-- this is tough for kids-- routinely identifying what's the independent, dependent, controls, a testable experiment with graphing and then learning how to engage, learn how to do a reading, know how to really dissect a reading. The content is great, but it's just the vehicle that drives all these skills. So I mean, I sometimes I use too much sarcasm in my department meetings at school. Like a lot of times we don't get to our last unit on oceans and how it, we'd start building in how it shapes climates. But I'm like, I think that's okay. I didn't have to do anything with oceans until I think my junior year of college in like a 300 level environmental science class. I don't think people pick up on that. But yeah, I think it's just, and that's what I try to sell middle school teachers on is I think we look so much on pacing and trying to cover the curriculum and getting all this content. I think if we just give these, lead these kids off with solid, fundamental models of forces in motion, particle models, life science, you know, any of those things, I think they'll pick it up. They'll take it to the next level in high school.

Mark Royce (15:04):

I know that you're pretty deeply involved with developing resources and strategies for, uh, modelers in middle schools. Can you talk to us a little bit about some of the resources that you've been involved with and what you love to share with other middle school teachers as far as resources and perhaps talk about some of the strategies that you like to help people employ?

George Nelson (16:09):

Yeah, so, I was on this, I think we did this podcast with a couple, like right during the pandemic, right during the lockdown actually. Those were scary times. And the same deal was then I was trying to develop like new middle school units. Like I've rewritten with my current curriculum, some earth science units that I share in workshops. And if anyone ever asks reached out to me, a lot of times they get people, I have former participants from the workshops and I always try to push those things off. And I, even in a Google drive, a lot of earth science, like it's rock cycle plate tectonics, I have some weather and climate. Those are the real ones that really rewritten. And I have some small life science units. I haven't made the progress and I think about it often. It's just I wish that we could get a team together to help revise the middle school modeling units. But I push off and I know I've been kind of scolded before, but I'm all about whatever's best for kids, use it. And I'm using outside competitors. I don't really know if I view them as competitors, but non-modeling curriculum, there's good stuff out there. That's in the development and free to use. I know like OpenSciEd, I've never been to an OpenSciEd project, but I hear great things. I'm seeing really good things online, people posting about it. And I think anything that's NGSS aligned, they claim that they're NGSS aligned. Modeling is the pedagogy, the instruction to really execute it and take it to the next level.

Mark Royce (17:36):

I don't know the answer to this question. Do you know, does AMTA have modeling resources for middle school teachers through their websites? Do, are you familiar?

George Nelson (17:52):

I think they were published in like 2013, 2014. They were well done. It really helped me transition more to modeling in the middle school classroom. But yeah, there are units written now. They were published in a beta, they weren't actually ever, I don't think, believe they were ever field tested. So I struggled, especially the first year, like taking the physical science and then really understanding what's at the kids' level, what are better activities, really to hone out and brush out the storyline where the students really see how one activity builds off of another. So I hope that a lot of people have asked me for the eighth grade science and the forces in motion and I've modified it and the activities, the resources are much easier and accessible. So anyone can use 'em. I share 'em in workshops.

George Nelson (18:40):

I tell people, email me on the side, I send them to, I just don't know who, where, who, where to put it. It's, it's not in the same format that we have it posted on the AMTA website. It's just a Google Drive. So if everyone never needs anything like that, this is the one thing I love sharing these resources. I can remember like the way my first years of struggling with modeling was also the same way that when I was struggled when I was 22 fresh outta college with teaching middle school, like I didn't have labs, I didn't have resource, I didn't have worksheets, I didn't have anything. But I found this teacher and she's incredible. She's not a modeler, but she's awesome. And at the time her labs were great. It's Geneva Baker, she outta like Casa Grande, Arizona and I somehow found her website and I started just using her labs and she saved me that first year. And I hope what we're doing in the middle school is helping, there's helping teachers help transition their classroom. Cuz if you get it going, if you get middle school modeling going in your classroom, it's extremely rewarding. Like I enjoy, most days of the week, I enjoy going to work and interacting with the kids. And so

Mark Royce (19:42):

Are you willing to share your email on this podcast so people can contact you if they get interested and want to find out some more from you? Can you share that with us?

George Nelson (19:55):

Yeah. My work email is NelsonG at Wilmette39.org.

Mark Royce (20:02):

Wilmette 39. Now Wilmette is spelled

George Nelson (20:05):

W I L M E T T E

Mark Royce (20:08):

Wilmette39.org. Okay. Nelson G at wilmette39.org. We'll post that on the science modeling talks website as well, tied to this interview. So when people go and find this episode, they'll be able to see some other resources there and you can email me other content links and stuff like that that will post there as well. Cool. So you're leading some workshops coming up in 2023, right?

George Nelson (20:43):

Yeah, I think we're, yeah, I think I, and I've done a bad job. I've been so caught up, up in coaching right now, but trying to market the middle school advanced, middle school modeling. I think it's advanced topics. You can be a beginning modeler or needing to get brushed up or wanting more techniques. David Bates, I've worked with him and for years now and, we're gonna try next. Yeah, try to anyone new, try to help grow and help, help help modelers, middle school modelers reconnect.

Mark Royce (21:09):

Where will they find how to sign up for that workshop and is there more than one? And what are the dates?

George Nelson (21:16):

The workshop starts in January. It's a 15 week class. I think we'll go to May, but it's three hours a week, but we don't know what day of the week, whatever works best for people, participants. That's, we usually survey people and try to see what day of the week works. The more people we get in this class, we hope that they just share with their colleagues about this and potential interest of joining a workshop sometime too.

Mark Royce (21:40):

Can they register for that on the AMTA website?

George Nelson (21:44):

I believe so, yes.

Mark Royce (21:46):

Okay. American Modeling Teachers Association, I think it's modeling instruction.org is the link. So if you're interested in this middle school workshop, 15 weeks you said?

George Nelson (22:00):

Yeah, we just, we cover, we do modeling, we talk about modeling, we talk about the pedagogy, we really talk about building classroom community and connecting with our students

Mark Royce (22:09):

Classroom community.

George Nelson (22:12):

Yes, yes. Yep.

Mark Royce (22:15):

That's a different kind of phrase that, you know, as opposed to just getting kids to do work and comply to state standards or whatever. I mean, building community. Do you wanna talk about that a little bit?

George Nelson (22:32):

I think that the number one way, like education is like, you know, it's, I think a lot of people disagree with it, but the number one way you really wanna teach kids is you want to get them in order to get kids to learn, you gotta be able to connect with them and build that environment where everyone feels safe. And, a lot of it is the management and how you, how I interact with kids. So I think I just got off of parent teacher conferences, a hundred and thirty five, five minute conversations with different parents. And I think if I wasn't talking about trying to get kids to participate more in discussions and the skills we're doing to get them ready for high school, another one was two, three of them were, were tough ones were, it was just like, can't get them to engage with their peers.

George Nelson (23:11):

They just don't feel welcomed. Where I work at, I, I think some of my buddies that have taught in other communities and we realized how fortunate we are and we got a great supportive community and great kids and it's, I don't know, I don't think there's, there's not definitely not a one size fit all for that one. It's trying to get kids to engage, trying to find peers they like. I also think like junior high is, I don't know how you felt junior high was not, it's not a fun, a lot of people, it's not a fun time. So it's trying to just make sure, you know, that you get the kids knowing that you're there for them and you're on their side and, yeah. And the management, I think we, Carly Del and I, we ran a workshop, we ran this like couple years ago I think.

George Nelson (23:52):

Um, we talked about management, I forgot the name of the book. It was, I think it was called Hacking School Discipline that we read. And there were so many tidbits in there and about just really how you connect with kids and the word, the words that how we engage and talk with our kids when they need to be redirected is really important too. And the school system and setups that you have going along the way, um, along the way are there too. And we, we talk about all this. I mail the books out for free and we, yeah, we talk about, yeah, those are just, they elicit good conversations that people bring up

currently in their classroom. Like things that they're experiencing in their classrooms, challenges that they're having. And we have really real authentic conversations during it.

George Nelson (24:38):

So I run these these classes, but I mean, I'm stealing this from Don Pata from Michigan, more of a learning leader. I think I benefit just as much as the other participants and I don't think I'd be teaching at the school I'm at today and the teacher that I am today if I wasn't engaged with all these different teachers from all these different places. Yeah. And it's awesome that we get these people from all sorts of different backgrounds cuz it's just you hear their experiences and what they're going through and their, what, what their school culture's like. And it's really interesting.

Mark Royce (25:12):

I have a lot of respect for you and those who are choosing to work in the middle school environment because like you were mentioning that age group is really hard to get them to engage relationally with people because they're so trying to figure out who they are and where they fit and there's a lot of, kind of inward focus with those kids and sometimes a lot of shyness and it is just great that people like you are working to help those students to come into their own and relationally with others as well as in a learning environment and understanding how to learn and better themselves. I think it's great. We talked about the impact of COVID and the pandemic and the shift in in school with teachers face-to-face and all that kind of stuff, George, but what would you say would be the way or your advice on how to get teachers engaged again and to really pull them out of their online seats and get 'em face to face and, you know, what would you suggest that we do?

George Nelson (26:31):

You know, it's funny. It's funny you bring that up. As two weeks ago I was out in the Chicagoland suburbs. I coach Science Olympiad and we had, I was at the big conference and there used to be 300 or 400 teachers going to these classes, going to these coaches clinics. And the one thing Science Olympiad run nationally is they were saying that they're only getting a fraction of the people to come to these clinics, go to these professional, go to reaching out for resources, attending the classes. I know AMTA is seeing the same thing, but yeah, it's not an AMTA problem. It's an educational and general problem and it's trying to market which AMTA has really progressed how they, how we've run the organization the last couple of years.

George Nelson (27:18):

It's really trying to get people to come back out and I think a lot of teachers, like you said, are struggled, burnt out, but these modeling workshops are engaging and if we can get people to go out for it, I think we'll definitely reinvigorate, get people remotivated to be back in the class, like be teaching and back in the classroom. But yeah, the teacher burnout, obviously morale is obvious. I hope it's trending upwards, but I don't know. But yeah, it's just trying to get people to grow, which is trying to grow the organization to make teachers better teachers. I think this is why I don't know where I would be if I wasn't doing modeling instruction in my classroom. I think if I was still traditionally when I was in Chandler, Arizona, this is like, feels like a lifetime ago, but I was having a good year, but this is what made it better.

George Nelson (28:04):

And then when I came back to Illinois, teaching in some challenges, having some families, you know, broken households and having students, challenging lives as a modeling instruction was the number one

way that for me it's about teaching and learning and building that community. And that really saved me in my mindset of the purpose of what I'm trying to do as a teacher. I still enjoy, I mean, I still have great kids where I'm at right now and just trying to keep going, trying to always just try to keep building being a better teacher and trying to help other people out along the way. But I don't have an answer for how we can get a, I guess to not gets your answer. I don't know how we can get more people to come to these workshops. I think it's just giving, running great workshops where we have great workshop leaders where participants leave with a great experience, that word of mouth to their coworkers.

George Nelson (28:58):

That's really, that's really what it is. I think that's really what it is. I mean, I pitched and I, this is just me being ambitious and I don't know if it'd be waste of money, but like making sure that we're present at the major conferences, like trying to having a booth, but I don't know what the expenditures of that are. And I don't even know what's in AMTA's budget. I'm just a junior high science teacher. I don't, it's all I can talk about middle school modeling. I'm not good with any of the other marketing or any of the other things. So,

Mark Royce (29:27):

George, I think you're more than just a middle school instructor. You're an influencer and, you know, I just want to encourage you to continue with your influence. And, you know, I just, here's the thing. Maybe the resources that you've accumulated, you might want to maybe push 'em into the AMTA website a little bit with some connections there, resources available because that is a place some people go to find resources and it might help a little bit. And I know that what you've been involved with developing and the message that you have to share with middle school teachers is really important. And so I just wanna encourage you to continue on doing what you're doing. Don't get too discouraged, you know, yes, we had a bobble with the pandemic and all that kind of stuff, but we are, I see things rebuilding in the view that I have and I just wanna encourage you along those lines. Gosh, it's been really great to talk to you. Is there anything you want to share with our listeners before we wrap up our session?

George Nelson (30:40):

I just wanna thank you for all the work that you do with running these podcasts. And I enjoy listening on my commute to work once a month. I think the podcast, this has been fantastic with trying to just keep their community reconnected, so.

Mark Royce (30:54):

Well, thank you. I appreciate that. I love doing it and it's, I'm not a science teacher, but I've sure enjoyed learning from you guys and about, especially about this community of teachers. It's been great.

George Nelson (31:12):

You have a good Thanksgiving in Fresno. I think you're gonna be having much better than we are.

Mark Royce (31:15):

I was gonna tell you the same thing. I was just gonna say, have a wonderful Thanksgiving and Christmas coming up and enjoy the bits of time off you get and, but keep on keeping on in the classroom and I know you will. And I just wanna say thank you so much for taking the time to talk to me today and to share your thoughts with our listeners. It's been great. George, thanks,

George Nelson (31:40):
Thank you.