Janis Lodge (00:00):

To me, the reward of having those kids feel like they accomplished something and the way that they can take ownership of it and go in so many different directions, I cannot take that away from them. That's such an opportunity that if I have the means to do it, I have to just take it and run with it.

Eric Cross (00:18):

Welcome to Science Connections. I'm your host, Eric Cross. My guest today is Janis Lodge. Janis is a third-grade teacher in Orange County, California, with a specialization in gifted and talented education. Recently, Janis was awarded the Orange County Council for the Gifted and Talented Education Classroom grant. This grant funds a project that provides an extension to her third-grade science unit about environments and survival. Through this project, students will think like a biomimicry engineer as they design a robot that is inspired by an innovation found in nature. In this episode, we discuss how she uses interdisciplinary teaching practices to make time for science learning; why gifted and talented education strategies can benefit all students; and her process for creating a problem-based lesson that ultimately earned her a grant for her classroom. And now, please enjoy my conversation with Janis Lodge. One, welcome! Thanks for being here.

Janis Lodge (01:14):

Of course, I am happy to do it. I'm excited for the opportunity.

Eric Cross (01:17):

Of course! Yeah. Elementary school teachers in science, I feel like there's so many things to have conversations about. And some of the things that you've really focused on, I think, are, really, really important. But I wanna start off with your journey of you becoming a teacher in the classroom. And so, would you kind of give your background, your origin story? How did you end up as a third-grade teacher?

Janis Lodge (01:37):

Well, my story is definitely not a traditional story. Before I was a teacher, I was actually living in Maui, Hawaii. I moved there right after college. I went to Chico State in Northern California. And I got a degree in graphic design. And after I graduated, well, I should give a little bit of a backstory. My last summer before graduating, I spent the whole summer in Maui and I just fell in love with it. So when I graduated, I decided instead of applying for jobs in Northern California, I'm just gonna put some resumes out in Maui and see if I can get a job. And I did. I ended up getting a job doing graphic design and marketing for a kite surf company out there. And I ended up just staying for seven years on the island. And after about seven years, I kind of got a little bit of island fever and decided I wanted to come back to California. I wasn't sure exactly what I wanted to do, but I just had this calling that I need to do something a little more fulfilling with my life. And I started thinking about different ideas and dreams I had. And I actually started thinking about when I was younger, right? I had this dream. If you were to ask me when I was 10 years old what I wanted to be when I grow up, it would be elementary school teacher.

Eric Cross (02:48):

Really?

Janis Lodge (02:48):
Believe it or not. When I was younger, I transformed my bedroom into a classroom. My stuffed animals were my students. I just thought I'm gonna be the next best teacher ever. And you know, as I went through life and kind of went in different directions, I kind of lost sight of that dream a little bit. But for some reason, when I decided to change careers, I just remembered that. And so I just decided to go get my teaching credential and see if it worked out. And it was probably the best decision I made. I feel like everything just fell perfectly into place. I ended up getting a job at an amazing school, and now, five years later, I'm a third grade teacher.

Eric Cross (03:28):
So one of the questions I have to ask, and talking to elementary school teachers, this comes up a lot: How do you make time for science as an elementary school teacher who's teaching everything? And let me kind of premise this with, at least for those of us in California, and I'm sure the rest of the states too, but we know this; There's kind of this pressure with pacing and then even, depending on what school you're at, math and English tend to get the bulk of things. And maybe there's this perception also of like, well, I gotta teach math and English, and sometimes science gets put to the back burner for different reasons.

Janis Lodge (03:57):
Well, you're exactly right. The beginning of the year, we were provided with a pacing from the district. And you know, they try to keep us on track, saying, "You should be starting Unit 2 at this time." But other than that, there's really no specific guidelines of how many days we're supposed to be teaching or for how long. But one kind of secret that I've discovered is that I can weave science into the other subjects, specifically with language arts. So quite often what I do is I take a look at the language arts standard, and if it's identifying the key details and the main idea, well I can do that with the science books used from the curriculum. So I'll just pull those readers and we'll do the exact same skill, start with the same standard, but we'll use the content from science. By doing that, we call that kind of like interdisciplinary study. And the students really enjoy that more, too, because they're using the same skills but they're diving deeper into the content.

Eric Cross (04:54):
Right.

Janis Lodge (04:55):
And so also that helps build the background knowledge. So then when it comes to time where, if I want to do a science lab or a science investigation, now they already have that background knowledge 'cause we already dove deep into the reading and they can apply that pretty quickly right away into their lab or whatever activity they're doing.

Eric Cross (05:12):
Can you give an example maybe of how you might pull out something that might be a skill that you're trying to develop, maybe in an English content, but you would pull that out in a science lesson, maybe? What would you do?

Janis Lodge (05:25):
We're actually doing that right now. So we're in our second unit of science and they're studying inheritance and traits and they're looking at different organisms to see how they have adaptations to help them survive in their environment. So coincidentally part of the literacy skills is to look at multiple sources, do research, and summarize and make analysis of what they're reading. And so we have different varied resources. I have websites; I have books, ebooks, videos, and pictures. And they're choosing which four sources they want to use. And then, then they're coming up with a summary at the end and then putting together a Google Slides presentation based on whatever organism that they chose.

Eric Cross (06:05):
Did you have a science background before becoming an elementary school teacher?

Janis Lodge (06:11):
Um, none. Besides what I, you know, took in high school and college.

Eric Cross (06:16):
Did you find it easy to kind of lean into the science, or was it something you just kind of jumped into and said, "All right, I'm gonna get after it"?

Janis Lodge (06:23):
What's interesting is if, you know, throughout my education, my favorite subjects were English and reading and writing and art. And quite honestly, science wasn't my favorite subject. But I think because of that, that inspires me to come up with creative ways of presenting the information to them and making it exciting and engaging for them, because I don't want them to feel that way. I want them to be excited about all subjects. And I think that's the beauty of combining the different subjects like I mentioned before. Like I say, you know, "What would a scholar do? Think like a wildlife biologist. And like with my project, think like a biomimicry engineer." And so it kind of shifts their thinking. Like, it's not just, "Oh, we have to study science." It's like, "No, you are the scientist; you are a meteorologist; or you are an author. How would an author write about this? How would an illustrator capture this in a photo or a comic strip?" And so, when you really combine those disciplines, you can take it to another level. So even if science isn't their favorite subject, like maybe it wasn't for me growing up, they can still take something they're passionate about and apply the science content to it and they really resonate with them.

Eric Cross (07:37):
You leaned into your strengths. Which are more like, coming into it, you had all these kind of creative strengths. You have that background as a graphics designer. You were into the arts. But then with those strengths, did that kinda give you more confidence to dive into the science work, because you approached it from your assets that you were already coming to the table with?

Janis Lodge (07:55):
Yeah.You said it perfectly. If you look at it from a different lens, there's all these different ways you can approach science.

Eric Cross (07:59):
I find it in my own science class, too. We're all teaching the same standards. But how I approach it is through Eric Cross's kind of personality and understanding and my angle, and another teacher might do it a different way. But we're all leading to the same destination.

Janis Lodge (08:14):
Exactly.

Eric Cross (08:15):
That kind of leads me to my next question, and this is having to do with the project that you just alluded to. The biomimicry project. So you did a biomimicry project. Would you consider that like a project based-learning assignment?

Janis Lodge (08:26):
Well, this will be the third year that I've taught this unit. And when I wrapped it up last year, it's through the Amplify Science program, and they do a wonderful job of having a lot of investigations and really thinking like a biomimicry engineer. But the final part of the unit was to design a robot inspired by a giraffe, to eliminate invasive plants in a particular environment. And the project part of it at the end was to create a model using Popsicle sticks and pipe cleaners. And then the other part of it was a digital simulation where they would put in different shape structures of teeth, and kind of reconfigure the shape of the mouth. And then they'd put in what they think is effective, and then the computer would say, oh, you're 98% successful or 70% successful. And I remember at the end of it the students were like, "OK, well when do we make the robots?" And I thought, "Well, we're just doing the simulation, or we're just doing this model out of Popsicle sticks; we're not actually gonna make a robot." And they just seemed so disappointed. And that's kind of how the wheels started turning my head like, "Well, what if they actually could make a robot? The only thing stopping me is I don't have the materials to do it." So, shortly after that unit wrapped up, coincidentally I saw the email about this grant opportunity that was being offered through the Orange County Council for Gifted Education. And they said, If you have a project that you wanna get funded that would promote GATE strategies within the classroom, then you can submit this proposal. So that's how the ball got rolling for that proposal. And I researched different robotics kits and different companies and I found one that was really user-friendly for third graders, and not so difficult for me to learn as well.

Eric Cross (10:10):
You're a risk taker. Like, I'm already seeing this as I'm talking to you. Is that just who you are or do you have a network? Like what keeps you taking these risks?

Janis Lodge (10:18):
I don't really consider it a risk, because it's exciting for me. Like I said, I don't know that much about robotics, but the idea of learning more and then teaching that to my students is exciting. And you know, there was a little bit of risk 'cause I'm deviating a little bit from the curriculum, from the standard lesson, but to me, the reward of having those kids feel like they accomplished something, and the way that they can take ownership of it and go in so many different directions, and on top of that, develop coding skills

and computer science skills and robotic skills, to me it was just like I cannot take that away from them. That's such an opportunity that if I have the means to do it, I have to just take it and run with it. So I think just being inspired by the potential outcomes of what could happen is what made me take that risk.

Eric Cross (11:05):
Did you just kind of create this from scratch? Did you work with a team of people? How did you come to the point where you were ready to present this for the grant?

Janis Lodge (11:12):
Pretty much from scratch. Like I said, the Amplify unit, it does teach them about robotics that were inspired by nature. So some of the materials that they read, and there's some videos that show really great examples. There's like a robotic arm that was inspired by an elephant trunk. There's a book that shows what this field is, biomimicry engineer, they actually show like what they do in that field. And I thought this is a perfect way to apply it because the curriculum's already pretty much set it up for me; now I just have to add this one final component to it. And essentially it becomes project-based learning at that point, because they're taking their knowledge and their skills that they've learned up to that point. Even the unit that we're doing doing right now is building up to it. So it's kind of that final—instead of giving them a test at the end and saying, "OK, tell me what you learned about inheritance and traits and environments," they can actually take that knowledge and apply it to an innovation or creation that comes out of their own mind, which is so much more powerful.

Eric Cross (12:11):
Do they connect to any other learning goals as they're doing these projects?

Janis Lodge (12:15):
Well, I think first and foremost, the 21st century skills that from day one I tell them, the four Cs: collaboration, creativity, communication, and critical thinking. All of those are woven in through this lesson. From the beginning, we talked about the whole engineering design process. So from the beginning, they start with a question and oftentimes that actually can be the hardest for them to think about, "What's a scientific question or a problem that I wanna solve?" If they're passionate about, maybe, a sport or the environment or something within their school, I go, "There it is. OK, that's the problem. How can you design something inspired by nature to solve that problem?" And then, from there they go into the planning and the designing and the testing and then the improving. So going through that engineering design process, I think, is what really makes them feel like they are the engineer going through this. And they can make mistakes. They can take risks. A lot of my students I've found are afraid to take risks. They wanna make sure they succeed. And they need that challenge to know that if they do fail, that's OK. We can just revisit this. We can test it. We can look at it in a different way.

Eric Cross (13:27):
You maybe wonder about, how do you assess something like this?

Janis Lodge (13:30):

I think that's where all those stages along the way are important. Because I wanna make sure that they have a plan and that it's based on the knowledge that they've gained in the unit. I think one of the other things about project-based learning is the final product of how they demonstrate their mastery. And in my classroom I oftentimes give them a choice of how they're gonna present that to me. So maybe they're going to write it out like an essay. Maybe they're gonna create a Google slide. Maybe they're gonna make a video. Maybe they're going to—obviously in this part they will have the model, but they'll have to have some way to explain it to me. And I think giving them that choice gives them the opportunity to show it in the way that's meaningful to them.

Eric Cross (14:14):

And are you using like a rubric when you're grading these assignments? Or, how do you actually grade it?

Janis Lodge (14:20):

Yes. So we have a rubric that's provided to us for the written component that all the students will do at the end. But I can take that same rubric and see if they've applied that to the project. So even the verbiage wouldn't really need to change. I think it's still important that the students are able to demonstrate this in written form and so all of them will still complete that written component, but to also give them the opportunity to show that in the modality of their choice. I think is really important too.

Eric Cross (14:48):

Right. And you have some students that feel much more comfortable being able to present orally versus—

Janis Lodge (14:53):

Exactly.

Eric Cross (14:53):

—versus writing versus maybe doing a video. I mean, we see that in middle school and in high school too. Students show their knowledge or their understanding of a topic depending on the medium in different ways, and some better than others. Some may find that they can communicate it a lot better orally, but when pen goes to paper or fingers go to keyboard, you might grade it completely different, 'cause they're not able to transfer what's in their mind into writing. And the way you're doing it, and giving that student choice, they probably have so much more buy-in, I'd imagine, because they get to pick what they get to do.

Janis Lodge (15:21):

Right.

Eric Cross (15:22):

You said something earlier and I wanna come back to it. So you mentioned GATE, and GATE is not

something that I hear a lot in my world, but it was something I heard a lot when I was in school. There were kind of all of these perceptions and ideas about GATE. You're a GATE teacher, correct?

Janis Lodge (15:38):
Right.

Eric Cross (15:39):
What is GATE, and what is it like being a GATE teacher? What are the misconceptions, if any, that you might have heard or come across?

Janis Lodge (15:46):
Well, so GATE stands for Gifted and Talented Education. And first and foremost, I think a misconception is that we're just kind of doing whatever we want; we come up with our own lessons and teach a totally different curriculum. Which is definitely a myth. Because we start with the exact same standards as any other third grade class that you'd walk into. That's definitely where we start. But I think in addition to the standards, we also implement what are called GATE standards: So they're Depth, Complexity, Acceleration, and Novelty. And there's a lot of tools that we use in the classroom, different strategies. You'll see things like the prompts of Depth and Complexity. We'll use things like "think like a disciplinarian"; I'm doing "think like a biomimicry engineer." But really, all they are are just thinking tools and strategies to elevate students thinking and kind of go below that surface level of the content to dive deeper. It also provides opportunities for acceleration. So for example, our last science unit, it was on magnetic force, and there was a handful of students that just grasped the concepts right away, and they're ready for something else. They're ready for more rigor. They need some challenge. And so at that point I can kind of pull that group aside and provide some differentiation for them. And I said, "OK, well, you understand the concept of magnetic force, balanced forces. So now what I want you to do is think about something that you're really passionate about, and how could you use magnetic force somewhere in that field—again to solve a problem, problem-based learning—and present it to me?" So they create this form, it's like a "think like a disciplinarian" frame, and one of them was "think like a hockey player." And he's trying to think of a way that he can incorporate magnetic force. Anyway, I could go on and on. But basically it's finding what these students' passions are. And I do that with all my students. And I should probably preface this by saying that even though these are standards that I implement in my classroom because it's a GATE classroom, these are practices and tools that can be applied to any learner, at any age. And they really just enrich the education for all students.

Eric Cross (18:02):
So your classroom is, is a mixed classroom. There's GATE students and then general—

Janis Lodge (18:05):
Right.

Eric Cross (18:07):
—students, non-GATE students, in the same class. It's interesting because I imagine GATE is kind of scaffolding up to a higher level, but then, you also said something that I've noticed when I'm creating

scaffolds for my students to support them, who may not be at a grade level, maybe in reading or literacy or math, those same scaffolds can help all students.

Janis Lodge (18:27):
So yeah, I don't just go, "OK, you're my GATE students; I'm gonna use these practices on you." I use it for the whole class. But I'm also surprised by having that mix of these different learning styles. A lot of times students are inspired by other students, or, you know, we have this big thing about one of the prompts is Multiple Perspectives. I try to do that as much as I can, because students are inspired by the ideas of their peers. And quite often, if they hear it from a peer, it could be exactly what I just said, but they heard their student say it in a different way and it just clicks and they're like, "Wow, I get that."

Eric Cross (19:00):
I think a lot of teachers struggle or, or maybe feel ill-equipped, to support higher-level students. Did you get trained to be a GATE teacher? First lemme ask that question: Did you get special training for this?

Janis Lodge (19:13):
Yes. I went through a course, I think it was like a six-week certification course, through my district.

Eric Cross (19:19):
OK, so you got a special training, which—I've been in the classroom for nine years; I teach at a university as an adjunct professor; but I've never been trained on teaching gifted or accelerated students. And I'm kind of wondering now, like, do you feel like it made you a better teacher?

Janis Lodge (19:33):
Absolutely.

Eric Cross (19:34):
And if so, how do I get to do this?

Janis Lodge (19:36):
Well, it's through the county. I mean, anybody can get trained and certified how to teach this way. But, just like you said, I think coming out of that, my eyes were just open, and my biggest takeaway is that these practices, even though they are designed for gifted and talented, it really kind of reshaped my thinking about how I, number one, present material to the students, that I'm doing it in an engaging way, and I'm not just lecturing at them; there's opportunities for them to collaborate and communicate and use multiple resources. So, you know, how I'm teaching has changed. And then also, how I'm providing opportunities for them to demonstrate their learning. And a lot of that is project-based learning, because once they have the knowledge and skills they need to do something with it. I mean, that's really the true definition of innovation, is taking the skills or taking something that you've learned, and now go with it. Run with it.

Eric Cross (20:32):
How can we take what you've learned and then kind of spread it, so teachers have this in their toolkit,

too? Like for me, I have multiple ways to be able to support reading and literacy and math and tools and sentence frames. And my students who have special learning plans, I have a have a lot of tool sets for that. I wanna build my tool sets for this other area for my students who want to continue, who wanna run, or go beyond, or even stretch themselves. I think we need to take some of the things that you're doing and not make them kind of like this exclusive group, but also let's share it with everyone, 'cause if everybody can access it—

Janis Lodge (21:03):
I agree.

Eric Cross (21:03):
—we might see a lot more potential or a lot more opportunities for students who might not otherwise have them.

Janis Lodge (21:08):
And one thing: My school, I'm really proud to say that my principal has seen that. You know, he's like, "Well why are we just keeping this in the GATE classroom?" So he's working on getting all of our teachers certified.

Eric Cross (21:19):
No, I love what you're doing and your principal sounds, sounds awesome for doing that and recognizing that this can benefit more students than just the ones who, you know, pass the Raisin Test, I think it's what it was called when I was taking it, or whatever it is back then.

Janis Lodge (21:31):
Exactly.

Eric Cross (21:32):
We've talked about project-based learning, the GATE classroom...I kind of wanna come back to you as we wrap up. Thinking about, like, the jobs that you and I do, and the people that listen to this podcast, we have one of the few jobs that people remember us for a lifetime. And I wanna ask you, who was someone that was maybe inspirational in your educational career, that inspired you, or is maybe one of the most memorable? You might have several...but who is someone that was memorable to you in your career, and why? Why were they memorable to you?

Janis Lodge (22:02):
Yeah. Well, obviously, when I was younger, I was definitely inspired by all my teachers. The fact that I turned my bedroom into a classroom...I just was just in awe of this profession. But I think one that really resonated with me was my junior year in high school. I was taking a newspaper class and the teacher was Mrs. Kavanaugh, and she really taught us everything from writing the articles to the editing, to putting the pages together. And I remember in that class I was working on this program called QuarkXPress. I don't even know if it exists anymore. But I was just fascinated with putting all these pieces together that we'd worked on for so long and getting the articles, picking the pictures, the illustrations

and the titles. And I remember her looking at me saying, "You really enjoy this, don't you?" And I said, "Yeah." And she said, "Well, I have a computer graphics elective class that you should take next year." And I thought, "OK, I'd love to do this, this opportunity to expand my knowledge and my skills." So because of that, I took the computer graphics class the next year and I just remember throughout the whole time, she was just constantly encouraging me and acknowledging my skills. And I find myself doing that as a teacher as well. 'Cause that really resonated with me. And it's funny, this summer I was going through some boxes of some old stuff from high school, and I found this handout that I had made, because I remember my senior year of high school, she said, "Janis, you know what? You're doing such a great job; we have these new, incoming students coming into the newspaper class, and I'd love for you to actually teach them how to do this pagination on this QuarkXPress program. I want you to put something together and actually teach it to them." I thought, "Wow, she believes in me that much that she's gonna let me teach this to the incoming students." But I think my takeaway from that was that she gave me the opportunity to take those skills and actually do something with them, to apply them right away.

Eric Cross (23:53):
Mrs. Kavanaugh. Miss Kavanaugh. Shout-out to Miss Kavanaugh. As you told that story, I heard you as a teacher because I'm hearing she's applying these GATE strategies in that situation. That's what that's what I heard.

Janis Lodge (24:08):
Yeah, absolutely.

Eric Cross (24:09):
She personalized this learning. She created a specialized opportunity. You presented to a real audience that was authentic. It had this personalization in it and this rigor and this challenge and it made a huge impact. And it's just amazing to listen to you and hear this come full-circle, and now you're doing this with little ones. And I just wanna thank you for your time in doing the interview, sharing your story with how you became a teacher, your students, the projects that you do. And just like so many teachers, going the extra mile for your kids and bringing in these really important 21st century skills; they're gonna be so much better off for it. And I know it makes my job easier when I get them in the classroom, so thank you.

Janis Lodge (24:49):
Yeah. Well, thank you for the opportunity.

Eric Cross (24:51):
My pleasure. Thanks so much for listening and we wanna hear more about you and the educators who inspire you. You can nominate them as a future guest on Science Connections by emailing STEM@amplify.com. That's S -T-E-M at amplify dot com. And be sure to click subscribe, wherever you listen to podcasts, and join our Facebook group, Science Connections: The Community. Until next time.