Ramona Schindelheim, WorkingNation editor-in-chief:

You are listening to Work in Progress. I'm Ramona Schindelheim, Editor-in-Chief of WorkingNation. Work in Progress explores the rapidly changing workplace through conversations with innovators, educators and decision makers, people with solutions to today's workforce challenges.

Ramona Schindelheim, WorkingNation editor-in-chief:

There's a gender gap in the STEM workforce, particularly for women from underrepresented groups. To help close that gap the nonprofit, Rosie Riveters is on a mission to inspire girls from diverse backgrounds to explore science, technology, engineering, and mathematics to help show them that this could be a career for them. Brittany Greer is the founder and executive director. Brittany, thanks for joining me on the podcast.

Brittany Greer, Rosie Riveters executive director:

Thanks so much for having me.

Ramona Schindelheim, WorkingNation editor-in-chief:

I love what you're doing. I love that you're helping inspire young girls to think about STEM in a way that maybe they hadn't thought about it before. Let's start from the beginning. Why did you think it was necessary to create Rosie Riveters?

Brittany Greer, Rosie Riveters executive director:

So my background is communications. I've worked in everything from politics to Puma shoe influencers and everything in between. And that road actually led me into the nuclear industry. So I worked for association called the World Association of Nuclear Operators, WANO for short. And we were very much looking at conversations around safety culture and communications both externally and internally. And one of the first things you do in those fields is figure out who your audience is. Look at your data sets, who are you talking to? How are you talking to them? And the dataset that we pulled was male, almost entirely male. And I had said to our managing director at the time, "Look, we can have a conversation with this audience, but if we're looking to shift culture and you're looking to change things up, you've got to look at diversification of the workforce and why you don't have more women here."

Brittany Greer, Rosie Riveters executive director:

And so that sent me on a journey around the world to talk to women who had found themselves as nuclear engineers or had worked their way to becoming nuclear engineers. And during that time, I got deeply immersed in what's often cited as the STEM pipeline. We like to talk about pathways as an organization, but the STEM pipeline was this journey of where girls found themselves in STEM careers and where we lost them. And the first big disengagement point was middle school. There's great programs that were intervening at middle school, so at the drop-off point when we were losing nearly 30% of girls' participation in the subject matter. My question at that time was, "Why are you losing them by those numbers? And why are we only intervening for the most part at that point? And what work could we do prior to that to not only decrease the number who weren't engaging but potentially increase it?"

Brittany Greer, Rosie Riveters executive director:

And so really wanted to know what the data and the information was telling us and went on a search for what we could find. And there's still room for a lot more research in this area, particularly in terms of that disengagement that happens in middle school, but for us, three really key points stood out. Girls' confidence drops by 30% around the same age, so between 8 and 14 girls are academically overall ahead in elementary school compared to their male peers. And there's some really robust research around girls who are identified as gifted and talented and their relationship to learning subjects that aren't quick or that they don't get immediately because their expectations of their educational experience have been reinforced that they get things quickly or it's not too much of a struggle to get the answer. And they get actively praised for that.

Brittany Greer, Rosie Riveters executive director:

And so what we did was look at the lens of, well, if girls overall are academically ahead. Maybe they were all having a similar experience overall of not really having the opportunity to have productive struggles early in their elementary school careers, that their relationship to learning was one, that they should just be good at things, and that the space of we're going to go in and learn something new and maybe we don't have the answer and you might, God forbid, get a C on your first test was where we wanted to intervene.

Ramona Schindelheim, WorkingNation editor-in-chief:

In the research that you did when you were thinking about why women are not as represented in STEM fields, so you found that young girls they hit, is it a societal roadblock or is it a way they're brought up? Because it's interesting that you say young girls, they hit something and maybe it's a little hard for them to do and they're not used to having that challenge. Is there a challenge for young boys at that age? So I'm trying to understand that difference there.

Brittany Greer, Rosie Riveters executive director:

Absolutely. I mean, if you think about a boy's experience, if he's not academically ahead like the girls are in class, his experience overall in early elementary school is one that he doesn't get an answer necessarily immediately. Boys are often told to sit back down in their seat or not wander off, or they're going through this whole opportunity in their early elementary school experience of having a productive struggle, getting things wrong before they get them right and building confidence in the fact that they will get them right. So a lot of it has to do with just the curriculum and the aspect of the way that girls are approached in that early elementary school space and how they're challenged.

Brittany Greer, Rosie Riveters executive director:

And it's not that boys are desperately struggling, but they have that little more of a reach because of where they are overall academically in their development compared to where girls are. So if girls have less of a reach in that time when they're forming their relationship to learning, their relationship to learning is, "I'm supposed to know the answer. I'm supposed to get it quickly. I'm supposed to follow the rules here." Whereas boys are having that earlier experience where they get to have the space to go, "Oh, I didn't get it the first time, but I'll get it the next time." Or, "Oh, I'll figure that out." That's growth mindset. That's ultimately what leads into women not applying for jobs unless they're 180% qualified versus a young man walking into a space and going, "I'm 75% qualified for this. I have the confidence that I'll get there." And they hopefully do. And so it's those early formative years of, "How do I learn, where do I find praise and success within that space with my educational experience?"

Ramona Schindelheim, WorkingNation editor-in-chief:

This early intervention, this idea that girls lose the confidence, the expectations are different for them. So how do you step in with Rosie Riveters to change that engagement, change that interest and outcome?

Brittany Greer, Rosie Riveters executive director:

Yeah, so the whole goal of our programs is not only excitement and awareness of the opportunities that are available in STEM, that's one part of it. But the real core of what we do is providing girls in our programs with an opportunity for productive struggle, a space to get things wrong before they get them right, and as a result, build their confidence and their critical thinking and problem solving skills. And we do that through hands-on STEM projects. For our littlest participants when there's still step-by-step instructions involved, there's maybe that slight push out of something, a new skillset that they haven't done before that we're going to learn as a group and we're going to figure out. Then our sixth through eighth graders, it comes in the form of, we don't do step-by-step instruction. We do a pre-lesson of information, and then you have a operational example and a table of materials.

Brittany Greer, Rosie Riveters executive director:

And the first two things we hear in our program without fail are, "This is hard." And my favorite one is, "It's not fair." Because they never had to build that way, but they've never had to do a project that way before. They're so used to in their school environments of having, "Complete these steps, take this test, do these things," and they do that beautifully. So when they come into our programs and all of a sudden there's no instructions that this isn't fair is a natural reaction. Sometimes there's tears at the beginning. And so a lot of what we're doing in our program is supporting them to build confidence in their skillset. So that might look at, "Let's look at the example and tell me two things you see." "Okay, great. Are those two things on the table? Awesome. Can you try and putting those two things together for me first?" And they'll go and they'll do that.

Brittany Greer, Rosie Riveters executive director:

And now they start to build those skill sets of, "How do I approach this thing I've never done before? Or I wire my wires the wrong way and it won't turn on and I have to unwire the whole thing." I always liken it to the frustration one feels when you put the IKEA leg on the wrong way and you have to deconstruct the whole thing and stick with it. It's building the confidence of the fact that, "Yeah, that's frustrating, but I know I can take this part. I've learned from that experience and I can now apply it and move forward and have the confidence to walk into places where I've never been before."

Ramona Schindelheim, WorkingNation editor-in-chief:

Can you describe for us, given that this is mostly, this is an audio podcast, describe to us what's in the kits that you're talking about, these learning kits that might be in front of a young woman?

Brittany Greer, Rosie Riveters executive director:

They're a range. So we literally cover the breadth of STEM. We do everything from explore hydraulics and make a hydraulic desk lamp where the arm goes up and down, to exploring the science of sound. So in those kits, and we also have just programs where there's materials on the table, but in the kits, it's all of the materials needed to complete the project operationally. So to build a harmonica, we have popsicle sticks and rubber bands and straws. And if you put those together in the right way, you can

make a harmonica that vibrates and make sounds. And they'll apply that to the science of sound and we'll connect that to the pro AV industry and we'll make really loud sounds on a sound app and explore all of the things that have to do with that subject matter.

Brittany Greer, Rosie Riveters executive director:

Or you could have all of the materials to make a robot that draws. So you'll have a cup and a three volt motor and a battery pack and markers and double-sided tape. And the cool thing is that within that kit, I might build my ArtBot one way, and I have built my ArtBot 1,000 times over with many people and given my example as the way to work from, but those same materials can complete the objective of, "I'm going to build a robot that puts marker on the paper because the motor moves 1,000 other ways." And the beauty of that is that you get 1,000 other ways of completing the same objective. And then we get to look at the power of everybody's separate process through that. So the kits really do range, but all the materials to complete the project that's at hand are included and then they're optimized for the best success for the age group who's working with them. Because they're not pre-printed on a CNC machine and fit together perfectly, there's this open-endedness to them that the final creations are going to vary.

Ramona Schindelheim, WorkingNation editor-in-chief:

So you are providing these kits to whom? And how do they get into the hands of these young girls?

Brittany Greer, Rosie Riveters executive director:

Through partnerships. We always say that one of the large pillars of what we do as an organization is accessibility of our programming. We are not an, "If you build it, they will come," type of an organization." We're, "If you build it, find the right community partners, listen and adapt, then you have usable tools that are valuable to the community that you're serving." So we partner with everybody from affordable housing associations to the Girl Scouts and they have programs and kits that are tailored to their populations and their needs. So the Girl Scout kits that we work with, for instance, all of the instructions are tailored to troop leaders about how they meet the objectives of Girl Scout badges.

Brittany Greer, Rosie Riveters executive director:

We also deliver our kits in schools across the country. We've done over 12,500 of our kits directly in schools from Florida all the way to California. And those projects, instead the instructions and the information are tailored to be plug and play for classroom teachers. So they're aligned to learning standard. They tell how they fit into 45 minutes for a build if that's all that they have available for them in a classroom. The materials are all delivered in plug and play. And so the audiences vary, but they're all built on working with organizations who are already serving students and usually fulfilling additional levels of community need that go beyond what we do as an organization, whether that's feeding kids or teaching kids or providing a summer camp opportunity. We partner with other organizations and then facilitate through them as a part of those programs. We also separately have Saturday programs that are taught by our instructors, but the STEM kits are delivered through community partnerships.

Ramona Schindelheim, WorkingNation editor-in-chief:

You mentioned that some of the first reactions when the materials, if you are putting random materials in front of young girls and they're going, "Oh, no, this is hard. I can't do this." What's the ultimate reaction after somebody actually does it and builds it and make something come alive, so to speak?

Brittany Greer, Rosie Riveters executive director:

That's literally why we do what we do, and it's why volunteers come and volunteer with us for years, or teachers teach with us when they have full-time jobs in STEM. It's watching a kid go from, "I can't," to, "Look what I did." Because once you get through the struggle and you have completed the task and you did something that you didn't think was possible or you didn't think was fair, there is a radiance that comes off of a participant after that moment and they're excited to show you and talk about it. And sorry parents, they're probably going to talk about it for weeks on end when they come home and how they built it and how they did it.

Brittany Greer, Rosie Riveters executive director:

And then we work to have continued engagement opportunities. So we get to reinforce that moment, reinforce that you are more than capable of doing this. You've done it. It's interesting even in those build to those moments where somebody will do the first step and go, "Well, I can't do it." And the answer is, "You already did it. You just got to keep going." And so those moments of just pure pride are truly why we do what we do and helping somebody find the power in their process because there are different outcomes. And so we get to look at those projects around the room and go, "Yeah, maybe it took you twice as long as your neighbor, but you have totally different things and they're both incredibly valuable to this space." Or, "Maybe your neighbor built theirs in a completely different way than you. You both hit objective. This is the power of diverse workforces. This is where you get innovation and new ideas and opportunities.

Brittany Greer, Rosie Riveters executive director:

And a lot of times it's also working to help them find advocacy for their needs in a learning environment. Do you present differently than somebody else? And can you talk to your teacher about that so that there's maybe more breadth and empathy for your space to bring your process to the table? And so it really is just a magical experience all around, but it's goosebump inducing to watch a kid who was struggling maybe on the verge tears at the beginning, beaming with pride and what they've accomplished and completed at the end. If there's nothing better than it.

Ramona Schindelheim, WorkingNation editor-in-chief:

You start with the early intervention with younger girls. But you also have one part of your program called Rosie Innovators that you work with high school kids?

Brittany Greer, Rosie Riveters executive director:

Yes. So innovators literally came out of the fact that our alumni demanded it. So when we first started as an organization, we were doing early intervention. So we started at pre-K, we started at four, we went through 14. And then the goal following that was that our 14-year-olds went and pursued this plethora of amazing other programs, go to Girls Who Code, go to FIRST Robotics, go and do the internships, do all these awesome things. And they're doing those things, and they should be because amazing programs. But because we're a continued engagement model, we had participants, we have a participant who's currently in Rosie Innovators who's been with us for eight years. It's a little hard to walk away when you stick a red headband on somebody and you build a community for them to go, "Okay, bye now," because I turned 14, right? It's like graduating and leaving your friends. And so they kept coming back and volunteering.

Brittany Greer, Rosie Riveters executive director:

And so we spent a good two years figuring out what was our response to that need for them to come back in high school. And so we built Rosie Innovators as a program. And we put it in beta testing. We wanted to really figure out what wasn't there and where could we support. We didn't want to reinvent the wheel. There's lots of great programs out there. We don't need to just repeat what other people are doing. And so where we landed was two things, developing the, what are called soft skills. I don't like the term soft skills, I put it in air quotes, but we're on podcasts. You can't see my air quotes. Because I think they're just skills for life that we need.

Brittany Greer, Rosie Riveters executive director:

But everything from resume building. How do you talk about your STEM experiences? How do you write a college essay if that's what you're interested in? How do you format your resume for an apprenticeship program if that's something that you're pursuing? How do you network? How do you become comfortable with the fact that networking is a skill that you build and nobody likes it, and we all figure it out and build the skill and get better at it and then find our joy in it in some places, but that it's a skill that you exercise. So there was that component of working with the girls and connecting them with real women in STEM and getting an opportunity to shadow job opportunities and we have Women in STEM Day.

Brittany Greer, Rosie Riveters executive director:

But then we also wanted to kind of put them in the driver's seat of some communications and talking about what they were passionate about. So we give them copies of our curriculum, we have them brainstorm and coach them through a process where they pick up and design a project that matters to them.

Brittany Greer, Rosie Riveters executive director:

So for instance, we have a young participant named Emma who wants to be a mechanical engineer, and she really wanted to talk about mechanical engineering and simple machines with students. And when she first came to me, the project idea was a giant poster board. There was a glue gun involved, there was a lot of things happening, and it was cool, but it wasn't necessarily going to fit the parameters of our program partners. So particularly in the school space, we needed something that didn't have hot glue for third-graders that we could align to learning standards, et cetera. So we worked it through the process, we narrowed it down, we had those conversations, we looked at audience, and she ultimately came down to this 5x7 pulley with bobbins and double-sided tape, which is miraculous. And talked about simple machines by having a hands-on project of building a pulley with students and talking about those things that she's passionate about.

Brittany Greer, Rosie Riveters executive director:

And so once those projects are developed, they put them on a STEM night for a local school and we fund that whole activation so the school can experience their projects. And then we encourage them to find community groups for them to go out and deliver. And then we fuel all of that with funding for all of the project materials. And then if at any time we use any of their projects, like we used Emma's recently in a third grade delivery for all of third grade at a local elementary school, we then licensed that project from them to use that within our wider programming. And so recently, Emma's pulley project went to all the third-graders at Taylor Elementary. And through that process, we found out that Emma actually went to Taylor. So connected her with the teachers and third-graders about not only building the project, and

then that project itself was also funded by a local construction company. So we talked about local careers and local connections.

Brittany Greer, Rosie Riveters executive director:

And so it's really coming into that full circle moment of you get to experience these hands-on projects early. We connect you into your opportunities, we support you through your high school years, and then we put you in the driver's seat to really start developing those community relationships and molding them to the needs that they've seen through their own pathways and journeys.

Ramona Schindelheim, WorkingNation editor-in-chief:

That's lovely. And I also think it's great that you licensed it, so hey, she gets her first career step forward there.

Brittany Greer, Rosie Riveters executive director:

Yeah, check handover was like a big moment, we both cried.

Ramona Schindelheim, WorkingNation editor-in-chief:

I love it. Well, you mentioned construction. You mentioned audio/visual. And manufacturing is a huge, huge, huge industry that relies on STEM skills, but only about a third, or actually I think it's a less than a third of the workers in that industry are women. Given that there's going to be a shortage, and I've talked to Carolyn Lee at Manufacturing Institute about the shortage that they're seeing in the industry. Women are an untapped talent pool. Talk about how we take those young girls, young women, and now we're at this next step, introducing them into manufacturing or any other careers. How do we get that love of this to continue? What are your thoughts?

Brittany Greer, Rosie Riveters executive director:

Yeah, I mean, I think a huge part of it is storytelling and narrative. So we've got these hands-on moments, engagement early. A lot of times local manufacturers or businesses, anybody goes, "Oh, I want to recruit more women. I'm going to talk to women as they're coming out of college." Well, they've never seen themselves necessarily in your industry before. They don't see them in your industry right now. So that recruitment process can be a little trickier, but being able to talk to communities early and students early about, "Hey, that thing, that pulley that you love building, this is how we use it in our industry. Here's an actual job that you can go and do that utilizes these skills. And by the way, here's the pathways and the support systems that we have in place to get you there."

Brittany Greer, Rosie Riveters executive director:

There's a lot of times that I go to a lot of manufacturing events and they'll talk about their frustration that somebody will go and work at McDonald's, but they won't go and work in their factory and they'll make two times the amount of money. They don't know that it's there. They don't know what the opportunity looks like or the pathway to it or that it's for them. And whatever preconceived notion that they have of that field, if they have one at all, quite frankly, I think it's probably more the fact that they don't even know what it is, is whatever they've heard has been said. So the space to really reach into your local communities and talk about what your industries are doing and talking about what's happening in manufacturing and the breadth of skills that are there.

Brittany Greer, Rosie Riveters executive director:

I talk about this with the space industry a lot too. It's like space is all STEM, manufacturing is all STEM. You can hit any one of those letters and any kind of variation of a million parts of that and find a space for yourself in these industries. But to find that space, you got to know the job exists. You got to know the pathway that you can take to get there. You got to know what resources might be available to support you to access that. And your parents usually need to know a little bit about that too, so that they can feel confident in helping you navigate that space. So by reaching back and starting early and continually engaging and really connecting local companies with local communities, we get to have a tangible understanding of what's within reach. And they're great if somebody wants to go and travel the world and go across the country and do a job, that's awesome. But a lot of the times there's local talent sitting right there who would be delighted to walk into that space if they knew that the opportunity was available to them.

Brittany Greer, Rosie Riveters executive director:

So a lot of the work that we do is through our hands on STEM kits and through our programs is partnering with industry and telling that story. We're in the process of doing STEM kits for the manufacturing association in Pennsylvania. And so we're talking about manufacturing in Pennsylvania and talking about the breadth of different industries that exist there and what those companies are and where you can access them. And we're doing that through let's build a balloon powered car and talk about automotive manufacturing. And now all of a sudden I have this hands-on moment to make those connections.

Brittany Greer, Rosie Riveters executive director:

But it's too late to start when they're just coming out of recruitment, kind of timeline. Recruitment starts in kindergarten, and if you can invest in them early, they will know that they can come and find you at the end. And you're going to have a far greater participation rate of not only just people, but also people who have not gone to participate in your space before because you're welcoming them and you're inviting them, and you're showing them the opportunities that are available to them. And so I think the more that we can do that, the more that we can open up opportunities that haven't previously been available to a lot of the population.

Ramona Schindelheim, WorkingNation editor-in-chief:

Brittany, thank you very much for telling us about Rosie Riveters, and anybody interested, we'll have the link on the website.

Brittany Greer, Rosie Riveters executive director:

Thank you so much for letting me share more about what we do.

Ramona Schindelheim, WorkingNation editor-in-chief:

I've been speaking with Brittany Greer, the founder and executive director of Rosie Riveters. I'm Ramona Schindelheim, Editor-in-Chief of WorkingNation. Thank you for listening.