



## Meghan Federer

**Meghan Federer:** [00:00:00] We talk about industries and educators wanting to come together and have an impact, but we don't think about how the students are engaged in that, or what their voice is, or similarly for us as a nonprofit and as a museum in informal learning, the other side of that is thinking about the families that are engaged, you know, and thinking about their voices that are also present, and not just the partner voices.

**Annalies Corbin:** [00:00:24] Welcome to Learning Unboxed, a conversation about teaching, learning, and the future of work. This is Annalies Corbin. Chief Goddess of the PAST Foundation and your host. We hear frequently that the global education system is broken. In fact, we spend billions of dollars trying to fix something that's actually not broken at all, but rather irrelevant. It's obsolete. A hundred years ago, it functioned fine. So, let's talk about how we re-imagine, rethink, and redesign our educational system.

**Annalies Corbin:** [00:00:59] Welcome to Learning Unboxed. This is Annalies Corbin. And I am excited to be back with everybody today. We are going to talk about design challenges and the way that design challenges can be utilized in a number of different settings. And we've had this conversation on a few episodes already. But today, we are going to be talking with Meghan Federer, who is joining us from The Ohio Works. And so, as we get started here in, sort of, digging in a bit about Meghan, so she is STEM Education Director for Middle and High School. I suspect she wears many hats at a small organization and informal learning setting like so many do. We will get her to share lots of that with us. So, I have known Meghan—I've had the pleasure. I should say, of knowing Meghan for—gosh, it's been a while now, hasn't it, Meghan?

**Meghan Federer:** [00:01:56] Eleven years.

**Annalies Corbin:** [00:01:57] Yeah, something like that. And so, I met Meghan as a grad student.

**Meghan Federer:** [00:02:00] Yes.

**Annalies Corbin:** [00:02:01] And now, Meghan is doing amazing things all on her own. And so, it's really exciting to be able to actually have a conversation all these years later-

**Meghan Federer:** [00:02:11] Yes.

**Annalies Corbin:** [00:02:11] ... about the amazing STEM stuff that you are doing.

**Meghan Federer:** [00:02:14] Yeah. Thanks to kind of my experiences, I got started with grad school through PAST and Metro. I really took that and ran with it.

**Annalies Corbin:** [00:02:21] Yeah, you really did. So, Meghan ran some programs for us way back when, some of our fondest memories of kids in caves with Meghan Federer. So, welcome. We're thrilled that you're here today.

**Meghan Federer:** [00:02:39] Thank you for having me.

**Annalies Corbin:** [00:02:40] So, let's start, Megan. First, give us the 100,000-foot overview of what The Ohio Works is, what's its mission, its vision. So, set the stage for us.

**Meghan Federer:** [00:02:52] So, what we do at The Works is really focus on providing opportunities for learning. We want to create that spark. We want to really drive and engage youth, families, and adults in exploring history, art, and technology. Those are the core areas that we were founded to kind of support in the community. And STEM is the way that we approach the technology. And we have a huge basis of support and history, even in industry, in our community. And so, that is a lens through which we engage education, through design challenges, through programs, through fundraisers, and just through events for adults. We really just want to get them involved and, you know, take charge of their learning, and find new ways to explore, be a gateway even to other institutions that they could go on and explore as well.

**Annalies Corbin:** [00:03:41] And The Works, just for our listeners from, you know, all over the US and other parts of the world, it's a museum.

**Meghan Federer:** [00:03:48] It is.

**Annalies Corbin:** [00:03:49] Essentially. But it's more than that. So, help us understand a little bit about the context for The Works and what happens there.

**Meghan Federer:** [00:03:57] Nicely said, because we like to say that we are more than a museum, and we-

**Annalies Corbin:** [00:04:02] I read the website.

**Meghan Federer:** [00:04:04] Yes. And we are a center for learning. We're a small nonprofit museum in Newark. So, just outside of Columbus, Ohio. And what we do is cover a lot of ground in a small square footage. So, we have hands-on science and technology exhibits for kind of the youth and families audience to engage in exploration. Where you kind of think that side is a or that aspect of it is a children's museum, a science center, we also have opportunities for adults, and families, and just general community members to explore in the history of the area, but it's also history of the area grounded with a much larger context. So, events that happened in Central Ohio, were happening all over the United States. So, it gives you some context for local and national global history.

**Meghan Federer:** [00:04:53] We also have an arts background. So, we have an art gallery that, actually, is free and open to the public year-round as a gateway for arts in our community. Given that we are not supporting a larger populace, we're a more rural and suburban populace that doesn't have another art museum right in their backyard, we are one of the early gateways to art. And we also support art through our glass studio as well, which then ties on to-

**Annalies Corbin:** [00:05:17] Which is awesome.

**Meghan Federer:** [00:05:19] Yeah, ties in that rich history of glass and industry in our community. And all of it really does go back to that. We are supporting the history of innovation, the history of industry in our region,

both within Licking County, Newark, and the broader context of Ohio and the Midwest. And why there were successes and failures, and how that really shapes communities. And so, innovation is a thread that we weave throughout the entire museum experience.

**Annalies Corbin:** [00:05:47] And one of things that I personally love about The Works is the fact that it is so steeped in its roots, really are tied back to the industry in early manufacturing that was, quite frankly, very robust and prevalent in that part of Ohio for a very, very long time. And it still is, but it's changed.

**Meghan Federer:** [00:06:08] Exactly.

**Annalies Corbin:** [00:06:08] And the museum's done a really lovely job of not only showing the history, but putting that change into context over time and really tying it back to relevancy-

**Meghan Federer:** [00:06:21] Yes.

**Annalies Corbin:** [00:06:21] ... for the local community.

**Meghan Federer:** [00:06:23] Yes.

**Annalies Corbin:** [00:06:23] So, I would say bravo collectively to The Works because that's not an easy thing to do. And a lot of communities struggle over time with those just transitions that naturally happen. So, that's one of my favorite things. And, of course, the glass to you is just epically awesome.

**Meghan Federer:** [00:06:38] It is.

**Annalies Corbin:** [00:06:38] So, we'll come back around. We'll touch on that again before we finish today. So, I want to really, sort of, to dig in to, in particular, the STEMfest Program, because one of the purposes of Learning Unboxed is to be able to highlight these great case studies, these positive disruptions in education, and really sure to demonstrate (A), what others are doing, but then how others can peel away components of what's happening in other places, and bring it back, and do something on their own with it. And I think that STEMfest is a great example of that. So, can you sort of just give everybody an overview of STEMfest, sort of, where it came from, how it kind of got launched? And then, I'd love to dig into the nuts and bolts of how it's actually going to work-

**Meghan Federer:** [00:07:26] Yeah.

**Annalies Corbin:** [00:07:26] ... this coming year or so.

**Meghan Federer:** [00:07:26] So, it came from the exact place that we've been talking about. It comes from the roots, the industry really wanting to support opportunities for STEM learning. They want to be positive disruptors for some learning in our community. And so, going back, I want to say over a decade now, and before that for early conversations, but over a decade of slowly building these programs and finding partners to design challenges with that, again, go back to putting some relevance in the STEM learning for the youth in our community.

**Meghan Federer:** [00:08:01] And what this started from was a recognition by community organizations that STEM education was something that they could really get behind. And so, we saw it happening in schools, and they really wanted to find ways to be better community partners for education. And so, this idea of design challenges and giving students an idea of what the manufacturers, the industries, the science and technology

centers in our area actually do, and how they could maybe try to solve the same types of problems that they're addressing in the community, and have—you know, those problems are ones that have real impact on either the organization or on people as a whole. And so, to really contextualize that learning, which is the whole goal behind the design challenge but do it with that really local relevance.

**Meghan Federer:** [00:08:52] And so, that was the big picture idea. And so, over the years, we partnered with a variety of organizations anywhere from those that are located on our aerospace industries. We have Owens Corning partnering this year. We have done ones with the Licking County Humane Society. We've done those that are more design-based or engineering-based and some very mathematical and technical. So, we try to hit everything. And what we do is work with our partners to really figure out what would be a good challenge that they experience and how to put that in educational context for the middle and high school students that do decide to engage in STEMfest.

**Meghan Federer:** [00:09:36] And it's something that's grown. So, for communities that are looking to do design challenges that are in partner with their industries, I would say it's taken 10 years to get to this stage. Every year, it's a little bit more, it's a little bit different. And the one thing that I have learned over the time that I have been engaged with this program is that it was boots on the ground to have the conversation with the companies and businesses about how they really could support a program like this.

**Annalies Corbin:** [00:10:05] And we talk about design challenges frequently on the program. And, you know, a common thread that everybody who is engaged in a design challenge process always remind folks is that, you know, ultimately, one of the things that we're doing here in building that student confidence and, also, the local awareness about what's going on within their communities but, also, that we're helping kids understand that we believe they're capable of solving these problems.

**Meghan Federer:** [00:10:35] Yes.

**Annalies Corbin:** [00:10:36] Right? And that's the other key thing is by really sort of stepping out with a design challenge outside of the day-to-day learning that may happen. You know, personally, I'm all for we can just do all design challenges all of the time.

**Meghan Federer:** [00:10:51] All the time.

**Annalies Corbin:** [00:10:52] But I'm a little biased in that respect. But the point being, though, that at the end of the day, part of what makes them so special and so successful is they engage the students because the students come into that very quickly, figuring out that, "Hey, whoever it is it's hosting this thing believes we're capable of solving this problem," right?

**Meghan Federer:** [00:11:10] Yeah.

**Annalies Corbin:** [00:11:11] So, not only is it a real problem that we're working on, but it's one that folks believe that we can solve.

**Meghan Federer:** [00:11:16] Yes. And one of the things that I think really drives home that value, for example, with the STEMfest design challenges is that we have those organizations be there for the presentation of those solutions. So, the creative solutions that they've made, they get to present them to, not only that industry, but other examples of folks in those industries, whether they're from the education side or from the technical side. And so, they get feedback directly from people who have dealt with this issue in their careers. And that in and

of itself, you just see the sparks kind of go, and the curiosity, and the, you know, the pride in their presentation and in their work.

**Meghan Federer:** [00:11:55] And there has been many instances that we've seen over the years where there have been follow ups from those presentations or the next steps taken individually by the youth, not just by the organizations, but by the youth, to reach out and learn more or to take advantage of internships that have come about because of these types of opportunities. So, it does provide that next step connection to, you know, show that support and value for the work that they've done.

**Annalies Corbin:** [00:12:23] And kids rise to that almost always.

**Meghan Federer:** [00:12:25] Yes.

**Annalies Corbin:** [00:12:26] Yeah, absolutely. So, I want to talk a little bit about some of the specific challenges that you've already utilized. I don't want to get into what's coming.

**Meghan Federer:** [00:12:36] Yes.

**Annalies Corbin:** [00:12:36] Although that's fair. So, let's talk a little bit about the 2019 challenges. So, tell us a little. I just want to dig in to just a little bit. So, tell me a little bit of what was the architectural and engineering challenge? What's that all about?

**Meghan Federer:** [00:12:51] So, that went in partner with the Central Ohio Technical College and the Newark City Engineers office. And what they focused on is a little bit more like bridge design and engineering. And it's supported through the architectural engineering side of COTC and their faculty there. They get to do a challenge that is being evaluated on the same level that a college level challenge is evaluated. They have restricted elements of what they can use in their bridge. And so, they're only allowed to use classic ingredients of toothpicks and glue, but they have to calculate their amounts of supplies use. So, there's some cost conditions that they're reporting on for their design. They also get to do their favorite part, which is crush their bridge. So, they-

**Annalies Corbin:** [00:13:36] Always fun.

**Meghan Federer:** [00:13:36] Always fun. So, what they're doing, their goal is to produce the most sustainable bridge. And that means it's going to be the most efficient in terms of cost but also the most efficient terms of strength. And it is pretty impressive, some of the creative ways that they come up with to design a bridge because they can go out and say, "Okay, a trust bridge, that's the strongest one. We're just going to make that." But more often than not, that's not enough to actually, you know, approach that challenge. They'll build one, and they'll realize, "Well, that's fun, but it doesn't actually meet the cost effectiveness, or that when we test that, it breaks a lot sooner than we thought it would. And the design criteria for the size are off." And so, while seemingly simple, it can actually be quite an interesting challenge for them to dig into.

**Annalies Corbin:** [00:14:26] It is. And we actually use a variation of that at PAST in our teacher PD. We used spaghetti and marshmallows. Same principle. And it's the same sort of thing, you know, to watch the teachers struggle with the same things that the kiddos struggle with in trying to figure out, "Wait a minute, we could do this little differently." So, those are always great, great challenges. And I love the fact that the students are required a financial component and a sustainability component because, oftentimes, when we see design challenges, those two pieces get left out, right, if folks aren't allowed for enough time to actually get all the way through it. So, yeah. And what about zero waste, the energy challenge?

**Meghan Federer:** [00:15:05] So, zero waste energy. Well, we were kind of looking at a variety of things there, but they really were focusing on sustainability. And this was in partner with a couple of organizations. But this one of our challenges is often partnered with the Chemistry and Biochemistry Department at Denison University. And they've done a variety of challenges with us with zero waste. They've done water pollution. We've done green energy, solar panels, all things that kind of get them to think about that sustainability aspect. And this was yet another opportunity for them to look at it in, you know, a different lens. And so, those are always really popular challenges. I think chemistry is a great gateway for a lot of these teams that do decide to enter. It's always a very popular choice, but challenging. So, lots of fun.

**Annalies Corbin:** [00:15:56] And it's also a great way for students to get over their fear, right? You know, chemistry has this mystique to it.

**Meghan Federer:** [00:16:01] Yes.

**Annalies Corbin:** [00:16:02] Right. That it's, "Oh, that's one of those really be the hard sciences," and you know. So, it's only accessible to some folks but not all folks. And that's just not true.

**Meghan Federer:** [00:16:09] Exactly.

**Annalies Corbin:** [00:16:10] And it's a lovely transition point, I think, into a material sciences and engineering, which is very misunderstood.

**Meghan Federer:** [00:16:18] Yes.

**Annalies Corbin:** [00:16:18] So, awesome. And then, what about the innovative app and technology challenge? That's the third one that you guys did this last year.

**Meghan Federer:** [00:16:26] Yeah. So, that one, they were really focused on getting—you know, taking advantage of their interests and apps, technology development, the more digital age that they have, and having them specifically think about how technology could be used to improve their community. So, what they were trying to do in their community can be very broad. It could be their school. It could be students. It could be a specific population or could be much broader than that. But we wanted them to think about technology in a positive way and how we can be doing more than just playing games, or using maps, or listening to music, but how they could develop tools to have a positive impact.

**Meghan Federer:** [00:17:08] And so, they got to choose with that positive impact was. They were looking for an issue that they could identify, why it was an issue, and how technology might be able to help address it. And then, pilot their way through the app development itself. So, it also gave me an opportunity to deploy technical skills, learn about some of those areas that maybe they don't get a lot of exposure to but that are almost a little bit more—they're almost little more fluent in that just by being that generation.

**Annalies Corbin:** [00:17:37] They're definitely that, right? Yeah.

**Meghan Federer:** [00:17:39] Right. So, those were really interesting mix. So, we saw apps that were focused on a lot of school issues that we recognized as adults, and mental health, and bullying. We saw transportation as an issue for high school students. We saw community focuses for seniors. And so, it was very, very thoughtful what they were coming up with and interesting that how well they perceived some of the issues that

are present in their community and how they thought the students and youth could help address those. So, very powerful.

**Annalies Corbin:** [00:18:11] Yeah. That's absolutely a fabulous thing to say, yeah. I'm very excited to see the next one. So, yeah. I'm going to arrive that day. So, talk to us a little bit about the context. So, how do you have it structured? So, walk folks through the, sort of, process of the forming of the teams and the actual work tied to the challenge itself.

**Meghan Federer:** [00:18:33] So, essentially, for us, it's a year-long process in which we spend quite a few months working with our community partners to develop and design challenges that are open ended but that have enough structural information to get them going. We make sure that any materials that are required for a challenge are provided for teams, including if they need more, or more, or more that they never have to pay for materials required for a challenge. So, we want to, as much as we can, reduce barriers to access.

**Meghan Federer:** [00:19:04] We also have hosted multiple opportunities for the teams to engage with the partners that have developed the challenges. So, we host a kickoff event for STEMfest, but we can connect them to the companies for Q&As, we can help them reach out to other organizations, and just be that like anchor for providing those supports. Once the information is available, we push it out to schools, PAST participants, community partners, and just make it generally known that if anybody wants to come to kick-off or if anybody wants to sign up, here's how you can do it. They form teams. Most of them are formed and are registered through schools, but some of them are through other means. We just do require that there is an adult that is kind of the mentor for the program. We don't want them to coach, we don't want them to be involved in the challenge, but we want them to be there in case there are questions about connecting to a resource. And as well as that gives all organizations involved a contact point-

**Annalies Corbin:** [00:20:01] Right, right.

**Meghan Federer:** [00:20:02] ... for the teams. And so, we get teams of middle school to high school students. Anybody from 6th to 12th grade can sign up to form a team, and they get to work for about three to four months, depending on when they sign up, and, you know, they get to decide when they work. Some of our teams I know do their work after school as kind of a part of a STEM club. Some of them do it in some of their STEM courses and middle school, for example, or in an off period. And so, there's a lot of flexibility to that. There are no requirements for the number of hours that you must commit to it.

**Meghan Federer:** [00:20:41] We do often ask them to present on their iterative process. So, they have to be able to talk about multiple designs, the failures, and things that they did to make changes to lead to what their final product was. So, it isn't really something you can do in a week. And so, we usually see the teams are signing up in November and December to lead up to the event that doesn't take place until the end of February.

**Annalies Corbin:** [00:21:03] Right.

**Meghan Federer:** [00:21:03] So, it's a long-term commitment. And then, on the day of STEMfest, what they do is they bring all their fabulous work, and they showcase it. And so, we get a full day of middle schoolers, which is a very busy day, and a full day for high schoolers all on the same weekend. And we also bring in all of our community partners for those two days. They get to see presentations. They get to provide feedback and really just engage in the celebration of the process throughout the entire weekend. So, it's really exciting to see that it's energy like you wouldn't believe for an academic presentation.

**Annalies Corbin:** [00:21:37] Yeah, no. And it's a lot of fun. So, design challenges, generally, are so crazy engaging.

**Meghan Federer:** [00:21:45] Yeah.

**Annalies Corbin:** [00:21:45] And of course, you know, the kids love it because they get to shine in that moment.

**Meghan Federer:** [00:21:50] Yeah.

**Annalies Corbin:** [00:21:52] So, when you think about crafting, right? And so, in particular, crafting around the facilitating. Let's talk a little bit about the adult side of all this. We know what the kids are getting out of it. Lots of fun and opportunities. So, for the adults who want to engage in this, either as teachers in schools or adults, mentors, and facilitators, that it can be a heavy lift. And so, what's the support look like for those folks? Because we get asked that question all the time. Where do I find X, or what is the resource, or how do I know what to do? I mean, mentoring is one of those things that we know that kids benefit from tremendously. And it needs to come from a variety of adults, sort of, engaging in that process. Sometimes, it's really, really tough to figure out what does it mean to mentor-

**Meghan Federer:** [00:22:47] Exactly.

**Annalies Corbin:** [00:22:47] ... versus what does it mean to do for, right? So, how do you help those folks understand really where that space is?

**Meghan Federer:** [00:22:55] So, we're really fortunate to have solid relationships with a lot of our school partners in the region that support teams through STEMfest. And so, they're used to—even if it's not the same teacher, the school itself is used to coming to us for support for STEMfest to be able to make some of those connections, to direct to resources, et cetera. So, we try to do a lot of the lifting for the adults because we know that we want them to be able to be the positive person in the background for their team, but we don't want them to be on the team. And so-

**Annalies Corbin:** [00:23:27] It's a great way to put it, by the way.

**Meghan Federer:** [00:23:30] Yes.

**Annalies Corbin:** [00:23:30] Yeah, yeah.

**Meghan Federer:** [00:23:30] We want them to be their cheerleader, and we want them to be able to connect to them. And in order to do that, part of what we do when we provide kind of the resource packet for the challenge, we put in a quite a bit of background information, connection to resources, et cetera as long—as well as to the contact to the challenge provider, because that way, they can reach out directly or through us when there are questions.

**Meghan Federer:** [00:23:52] Now, what I have learned over the years is that most of the adults that are doing it are still having the youth draft the questions, and send of the questions, do the call, or do the email. But it is—there are still some logistics and organizations about making sure that the team is actually working and moving forward. But we put it on the team, and we make sure that the adults know as well that it's not necessarily even about them getting to STEMfest with a product. It's about getting to STEMfest with the process.

**Annalies Corbin:** [00:24:20] Right, right.

**Meghan Federer:** [00:24:21] And so, even—we encourage teams even that didn't complete the challenge to still come and showcase the work that they did accomplish, the challenges that they ran into, and how they faced those. And sometimes, those can be really powerful presentations because they raise a lot of issues that we see were common across teams, and they get kind of reaffirmed by that, that they're not the only ones that ran into those issues, or they discovered something completely new when they were doing that.

**Meghan Federer:** [00:24:53] And the fact that they were able to persist in the face of their challenges is a characteristic that we really like to highlight as well, and congratulate them on, and just acknowledge the work that they did. And that leads into one of the only things that we do, to recognize individuals at STEMfest is there's one individual award that's a nomination basis from the adults that are involved, and they can nominate individual on a team for being a persistent scientist. And we acknowledge one middle schooler and one high schooler a year for that. And it's a pretty—for us, pretty important recognition of the work that they put into, you know, their team, their solutions, the process overall.

**Annalies Corbin:** [00:25:36] Yeah, no. And that's a wonderful opportunity for a kid to feel like they made a commitment that mattered. Right, yeah. And oftentimes, that's—it's easy to get overlooked, especially in the crazy that is either middle school or high school, right? It's tough being a kid with no spaces, right?

**Meghan Federer:** [00:25:54] Yeah, yes.

**Annalies Corbin:** [00:25:55] You got a lot going on as a kid in those spaces. So, I want to talk a little bit about the industry side of that.

**Meghan Federer:** [00:26:01] Yes.

**Annalies Corbin:** [00:26:01] Right? Because the reality is that most communities have amazing industry partners who often don't know how to interact in the sort of education space. And I use that term pretty generically, whether it's formal or informal. Like The Works, they're formal inside the schools. The reality is most communities, industry partners would love to do something more meaningful rather than just donating time, or just coming on career day, or just offering shadowing, but they don't know what that might be.

**Annalies Corbin:** [00:26:34] And quite frankly, for the most part, schools and industry community partners are not very good at helping each other understand their own limitations or lack of. "I don't know what to do," right, I hear that all the time for schools. "Well, you know, we reach out to the industry partners, and nobody gets back to us". That's because you're not asking them very good questions. So, the industry partners say, well, you know, all the school wants is to help us, you know, fund uniforms for their band booster drive. Well, that's because, you know, you're not telling them that you would rather do something else instead, right? So, it's a funny dance that happens in every community. And so, as a, informal within the community and having that role, you have a unique perspective on these conversations, because I suspect you find yourself in the middle of them frequently.

**Meghan Federer:** [00:27:21] I do.

**Annalies Corbin:** [00:27:22] So, talk to us a little bit about, you know, that sort of public/private partnership 101 via Meghan Federer.

**Meghan Federer:** [00:27:30] You've said it all, right? So, we are intentionally placed as a conduit between education and industry. And we were founded to be that conduit. So, we've been there from day one. And now, 23 years later, we successfully really established ourselves as a partner for both sides of the community. So, we're an education partner, but we're also an industry partner. And what's really important to me is, like you said, making both sides of that conversation really clear. So, the industries really understand what supports educators need, and the educators really understand how to engage an interest and excite industries in doing those types of collaborations. And so, that's a lot of the work we do, but we also intentionally just serve as a connector when somebody asks us for information, or a question, or do we know anybody that does X?

**Annalies Corbin:** [00:28:26] Right.

**Meghan Federer:** [00:28:27] We try to make sure that we can foster that conversation and be a part of it because it is so important to have a strong community to do that supports. And STEMfest is one of the ways that we do it because those are avenues for educators and industry professionals to have a conversation, and to intersect, and to really see the result of what happens when they do. And that's powerful. The fact that they can see, for industry, see the return on their investment-

**Annalies Corbin:** [00:28:53] Right, right.

**Meghan Federer:** [00:28:53] ... and educators can see how valuable it is to have that input, and that can be very powerful to see, which is one of the reasons why we make sure we have everybody in the house to engage with the students, and why we also showcase other organizations during STEMfest, not just those that we're participating in a challenge, but we intentionally invite all of our community partners, and businesses, and industries to come and share the STEM that they do. And they get real hands on with everybody that comes in the museum. So, we have industry booths essentially all day every day during STEMfest.

**Meghan Federer:** [00:29:27] And those types of discussion points, I think, are what really start fostering that type of cross-sector collaboration much broader in the community. And without opportunities for them to come together and have an impact, I think it's a lot harder. And so, it's rough to start that conversation in a community where it's brand new and where nobody has done it before, but you have to start somewhere. And by getting them to come together, I think that is where you see real progress happen.

**Meghan Federer:** [00:29:59] And STEMfest is only one of the other points that we do across the year, but it's a big one, and it's one that directly involves the student voice as well, which is another area that is so often left out of these conversations. We talk about industries and educators wanting to come together and have an impact, but we don't think about how the students are engaged in that, or what their voice is, or similarly for us as a nonprofit and as a museum in informal learning, the other side of that is thinking about the families that are engaged, you know, and thinking about their voices that are also present, and not just the partner voices. So, there's a lot of discussion to be had at the table, right? A lot of different partners at play, not just our business and education partners.

**Annalies Corbin:** [00:30:41] Which is one of the reasons why we spend a lot of time on this program talking with folks in the informal space is because there's so much valuable learning and experience that comes from our informal folks because they do cross so many different paths.

**Meghan Federer:** [00:30:57] Yeah.

**Annalies Corbin:** [00:30:57] Right? And, you know, to your point, you know, the family piece that's not showing up at a school because there's a problem or just to celebrate something but that, you know, the

families are actually actively engaged in the opportunity to learn something. It's a different way to interact with those folks. And often, our informal is, quite frankly, are much, much better at that. And they have an awful lot to share with our formals in that space.

**Annalies Corbin:** [00:31:24] So, I want to spend a little bit of time talking about sort of the industry conversation. So, let's come full circle. And so, let's look at 2021, right? So, knowing you as I do, you're already thinking about what the following you're going to look like. And so, as you sit down with the industry partners and start to have the conversation around what might it look like for you to be specifically involved or help us come up with what the next challenge is, what does that look like? Because I want to get into a little bit of the nuts and bolts of the process that you specifically use at The Works with your local industry partners to help them craft the challenge.

**Meghan Federer:** [00:32:08] Yeah. One of the things that we do as we are looking ahead is is partnering with our area businesses, but also our area kind of—I would not call economic development, to even be thinking about what are these new areas that we should be exposing youth to, what are the organizations or businesses in those areas, and how can we engage them to support their communities? So, there could be growing sectors. So, we have manufacturing. And advanced manufacturing in Licking County is a huge component. And I would say of a majority of the students that participate are Licking County, but it's not restricted to Licking County, but most of our industries happen to fall within that. So, we have manufacturing, but we also have health care as a big area. We have computer and technology, and platforms that comes, essentially, with new organizations coming in and starting up footprints in Licking County.

**Meghan Federer:** [00:32:58] And so, what we're looking at is, where should we go next? And a lot of them, also, are reaching out because we have those strong community partnerships. So, how can we get involved? And so, this is one of the ways that we, you know, have a discussion of how they could get involved. Oftentimes, it'll be, we'll invite organizations to be part of our room support, our judging panels, and our interaction with the kids before we talk to them about challenges because we want them to see what it is and be excited by it.

**Annalies Corbin:** [00:33:29] And not be afraid of it.

**Meghan Federer:** [00:33:30] Exactly. Because-

**Annalies Corbin:** [00:33:31] Yeah.

**Meghan Federer:** [00:33:31] ... like, I'm going to tell you, we're going to do a yearlong design challenge process, and we're going to need-

**Annalies Corbin:** [00:33:34] You're going to like-

**Meghan Federer:** [00:33:35] ... of your time.

**Annalies Corbin:** [00:33:36] No way.

**Meghan Federer:** [00:33:36] Yes, exactly. But in reality, it's a lot more on us than it is on anybody else. We make it—we try to make the process as seamless and simple. And one of the ways that we do that is by having a little bit of a scaffolding available for creating the challenges. And we're really just curious, "Hey, what do you do that you think is so cool?".

**Annalies Corbin:** [00:33:55] Yeah.

**Meghan Federer:** [00:33:56] Okay, that. And then, provide for them some connections about how that relates to content that kids are learning, and how we could build on that to create a challenge. And sometimes, it's been something that is a process that they do on a daily basis, that just it's something that they have to figure out every day. Sometimes, it's a unique thing that once they solved an issue, they're able to iteratively use that process. And it really is industry-specific. It is organizationally-specific. But when you hit on an idea that works, I think everybody recognizes that.

**Annalies Corbin:** [00:34:31] Oh, yeah, yeah, yeah. And everybody has a great time, and they're willing to engage with you over and over again. And then, the other thing that I love about this is that it translates directly back into other initiatives that are happening in your community. So, certainly, within Ohio, but lots of other states within the US and other parts around the world as well are spending a tremendous amount of time thinking about and applying STEM and STEAM education. I don't want to get into the whole debate about the acronyms.

**Meghan Federer:** [00:35:00] Right.

**Annalies Corbin:** [00:35:01] I like design thinking. It's neither here nor there. But the point being that we are making a global effort to say we need more folks who are comfortable living in that space, whether they choose or ultimately land to work there or not. And as communities on an individual level start to wrestle with, how can we best facilitate our students moving into the wide array of opportunities that are, ultimately, going to be available to them through our industry partners and our career opportunities? It gets hard. K-12 move slow often, not always, but often, right? And so, these experiences like STEMfest and the other community conversations that The Works is facilitating help the schools within your region craft opportunities, pathways, plans, and strategic thinking for those next career opportunities for their students. Yes?

**Meghan Federer:** [00:36:03] Yes. And I think that's what engages all of our partners so much in this, is that they see that pathway, right? They see a pathway of supporting youth in the community and how that can have a trickle-down effect in the community that we start exposing them to more and more options, to more pathways within their education and careers, and how that really leads right back to them.

**Annalies Corbin:** [00:36:30] It does.

**Meghan Federer:** [00:36:30] And they are looking at STEMfest, as oddly as it sounds, as kind of a workforce investment. And they are so excited to support opportunities like that that really align with what they need and their interests, not just through The Works, but through other partnerships as well. And that's, I think, something that is so critical for the stability and growth of any community and for the businesses that are present there.

**Annalies Corbin:** [00:36:56] It is. At the end of the day, it's economic development, right? It's workforce development. It's economic development. It's the life and livelihood of our communities and its long-term sustainability. Especially in rural areas, we definitely see that. So, I think it's pretty exciting. And it lends itself to the conversation around, what the heck are we preparing students for anyway, which is a conversation I have a lot because I keep looking, you know, for—you know, there is no magic bullet, so to speak, on this one, but it's a conversation that we need to always have at the very forefront of thinking about any type of educational initiatives, I would argue. You know, I think that sometimes we do, in fact, lose sight of that. So, I love the programs that are happening at The Works because of the role you're taking in the community. Front and center, I love that.

**Meghan Federer:** [00:37:49] Well, thank you.

**Annalies Corbin:** [00:37:50] Yeah. So, one of the things that I always like to do with this program is sort of end or send off, I guess, if you will, to the folks that are listening, who are sitting back saying, "Gosh, you know, that's really, really cool. I'm wondering, could we do something or get something like that started in my community?" And, you know, everybody wants to know, what are the big things I should watch out for, right? If you think about the work that you were doing, what's the sort of high lob, if you will, the two or three things that people should be thinking about or mindful of before they start running down the road of saying, "Hey, we can do something similar in our community"?

**Meghan Federer:** [00:38:30] I would say be careful asking too much of your partners when you're starting something off like this. It's a big project. It's one of our largest events of the entire year, and we do it through the success of many partnerships. It's not something to put on one partnership. You definitely want to be a actual partner in the process and not just ask for them to create it for you. They are the experts in their field for the design challenge, but you need to come to them with the expertise to be able to craft in the language that you want.

**Meghan Federer:** [00:39:00] And I think that that's a key piece because it can be very easily overwhelming to just be told, "We'd like a design challenge from what you do in your organization. Let's have that now and go from there." But it's also important to recognize that there's a lot of really cool things that are happening in STEM industries and businesses. There are a lot of things, probably, organizations in your community don't even know are there that are doing amazing work. And sometimes, that always doesn't translate.

**Meghan Federer:** [00:39:33] And so, it's also being careful in thinking about something that is possible for anybody to tackle in a timeframe, because there's challenges there that are really unique, and are interesting, and that are exciting, but maybe just aren't feasible with materials, or with timing, or just don't translate well outside of the context of what they are working on. So, it's just a conversation. Be willing to have a conversation, to be collaborative, and to make sure that—maybe it goes back to making sure that all the voices are part of that conversation. You want to do something like this, bring some industry and educators to the table, and talk about how it should be designed for your community to have that impact on the student, because it's not a one-fits-all approach.

**Annalies Corbin:** [00:40:20] Absolutely. Yeah. Very exciting. Thank you very much, Meghan, for spending time with us today.

**Meghan Federer:** [00:40:26] Thank you.

**Annalies Corbin:** [00:40:26] And I have no doubt that folks will get an awful lot out of hearing about how design challenges work at The Works.

**Meghan Federer:** [00:40:32] Well, thanks for having us.

**Annalies Corbin:** [00:40:33] Absolutely. Thanks.

**Annalies Corbin:** [00:40:39] Thank you for joining us for Learning Unboxed, a conversation about teaching, learning, and the future of work. I want to thank my guest and encourage you all to be part of the conversation. Meet me on social media, @annaliescorbin, and join me next time as we stand up, step back, and lean in to reimagine education.