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Mike: From the Center for Occupational Research and Development, welcome to *Preparing Technicians for the Future of Work*. I am your host, Mike Lesiecki. In each podcast we'll reach out to people who are actually on the front line of the future of work and hear what they have to say. That means interviews with industry leaders, working technicians, and forward thinkers in the field. And, in every episode, we will suggest action that you can take. We want to inspire you to take that action.

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Today, we want to see for ourselves what industry is doing to spark the interest for the future workforce. We traveled to San Jose to NextFlex. They're one of the 14 Manufacturing USA Institutes. NextFlex is America's Flexible Hybrid Electronic Innovation Institute. As you can imagine, they're on the cusp of the future of technology, but they also realize they need the workforce to make that a reality. I'm here today with Brynt Parmeter, Director of NextFlex, and Emily McGrath, the Deputy Director. Hello, Brynt. Thanks for joining us today. I know your background was in the Armed Services. How in the world did that get you into your position today as the Director of this unique program?

Brynt: Mike, it was an interesting path and a long road, but it actually is very well aligned to what we're trying to do here at NextFlex, and to help create the future of advanced manufacturing in this next generation workforce. And I think the experiences in the military evolved around

balancing, "How do you get a large body of people mobilized to a common future, where they're able to maintain their individual skills that they bring to solving these problems, but also aligning everyone so they're collectively focused on the greater good of that industry?" And that's essentially what we're trying to do when we reach out to these young populations, is mobilize them to become part of this future of Advanced Manufacturing.

Mike: Thank you. We're going to hear more about their program called *FlexFactor*. But first, Emily, what skills did you bring to make this thing happen?

Emily: So, I have a broad background in program management across a variety of sectors, including government, nonprofit, and industry. And I think that my experiences leading up to this allowed me to identify the kind of tasks that we need to be able to implement, to make our programs really actionable.

Mike: You really sound like you're from industry, Emily. You've got a really good industry approach there!

Emily: Thank you.

Mike: Brynt, let me go back to you. Tell us about the program. I know you've highlighted for me today four of those main features but go ahead and tell us about the program.

Brynt: Yeah, so, our main goal, and what we're trying to accomplish, is "How do we familiarize students with the technology? How do we familiarize them with entrepreneurship?" So that they understand the education career pathways in the sector. And translating that a bit further is "How do we take young people in high school, or transitioning service members, or other target audiences, to expose them to what their future might look like in advanced manufacturing through industry engagement?" "What the education pathways are to that future through higher education engagement?" And then give them a project-based learning activity that they can really immerse themselves into the work and gain the purpose and motivation to want to take the journey towards that future. And it all boils down to accomplishing these four tasks that you mentioned: informing, inspiring, attracting, and recruiting these populations to become the future that we desperately need in this sector.

Mike: Brynt, say those four things again.

Brynt: Inform, inspire, attract, and recruit.

Mike: It sounds like an integrated approach. Emily, you've got to take this concept and make it happen. What do you do if you're approaching a new ecosystem, a new community, that wants to take part in the FlexFactor? What are the steps that you do to engage them?

Emily: So, we've identified a very effective process to actually launch FlexFactor in a new ecosystem. We work with education partners. We identify other really critical ecosystem partners, including an industry partner, and then local school districts. And we run through a series of steps, there's about six of them, to identify, onboard, and align ecosystem partners. We go through a train-the-trainer process. And then we're ready to actually launch a pilot, and then scale the program from there.

Mike: Interesting. Brynt, NextFlex is a nonprofit organization. So, you're doing this as part of this Manufacturing Institute, but you are a non-profit?

Brynt: We are! We're a 501(c)6 industry consortium and a 501(c)3 educational nonprofit at the same time. And by establishing ourselves as both organizations, we're able to have a foot in industry and understand what the demand signal and needs of our industry partners are over time, and then translate that to our academic partners. And, in conjunction with our academic partners, to help bridge what you need to learn to what you need to do in the future.

Mike: Excellent! The program's been running since 2016, right, Brynt?

Brynt: Yes, and we had the idea in September 2016, ran our first pilot in October of 2016, and have scaled it up quite rapidly from there.

Mike: Has it worked?

Brynt: It has worked! And we have been pleasantly surprised in all aspects of the program. We scaled locally from 8 students, to over 3500 have been through the program just in the San Jose, CA ecosystem. We've had the program launched in other parts of the country, for example, in the Cleveland area (Lorain County, OH), where they're just under a year into the program, and last semester went from 17 students to 700 in a semester...

Mike: Wow!

Brynt: ...and bringing in a lot of other industry partners and adopters across the country.

Mike: How does this impact the students? I mean, you've had an opportunity, both of you, Emily and Brynt, to see the impact that it's had on students. So, tell us a story about what you've seen.

Brynt: I think I'll describe one of the first programs that we ran early on with an English class. We had a young lady who, when issued the challenge of "think of a problem, think of a product, and build a hardware solution and a business model around it, and then pitch it 'shark-tank style' to a panel over four weeks", as a means to get them excited about "what this future in advanced technology and manufacturing is going to look like," we had a young lady who ran middle-distance track. She had asthma. And she convinced her team of four students to focus on that as the problem and come up with a product to solve it. She devised a product that would be integrated into a chest strap that would monitor the onset of an asthma attack on one of her middle- to long-distance runs, and then dispense just enough medicine to mitigate the effects of that attack by the end of her race. So, she didn't have to carry an inhaler around.

And it's that kind of innovation where the students are scanning their environment; they're understanding how to provide contextual value to that environment through their own devices and ideas. And all of this gives them a sense of agency over their learning and over their ability to solve the big problems of our time.

Mike: You're asking high school students to do all these things: conceptualize, ideate, come up with a mini-business plan, in an eight-session program?

Brynt: Absolutely! And we have been surprised by the students initially, and anymore, what we realize is that surprise has turned into almost the routine. And it's amazing what a group of 16-year-olds can do, because the power of the access to information through the internet, and their cell phones, they can do the research. They can come up with these ideas. They care about the ideas. And they want to desperately be part of the solutions to those problems of our time. And that you want to give them agency to do that.

Mike: Emily, you've seen students in the program. What sort of changes have you seen when they first start, to when they move through the program?

Emily: We see students get really oriented through the program. Their experiences in industry and their experiences in education help them understand why they're in school, and why they're learning. And identify their own really personalized pathways: what they want to do with themselves, with their lives. And how they can actually go about doing that: the exact school programs they need to study to get there.

Mike: Brynt, suppose I work at a community college. Why do I want to bring this program into my system? What's in it for me?

Brynt: Well, if you're the President of a college, or the Chancellor of a district, and you have some amazing pathways—which nearly every college we've ever worked with across the country has outstanding programs that are in varying degrees aligned with their local industry partners—and one of the things they often ask us is, "How can we reach out to recruit more students into those pathways?" And that's really what the FlexFactor program does. At the end of the day, you have a team and an approach that brings busloads and busloads of kids who have seen what their future looks like in industry to your school. And you can enroll those students in your pathways that you've already created. We've seen success levels, just in this year in San Jose, for example, about 1300 kids through the local FlexFactor program across six school districts. And 95% of them have enrolled in one of the local colleges.

Mike: Wow! Emily, did he really say he's bringing "busloads of students" to enroll at my school?!

Emily: Quite literally, yes!

Mike: Well, that's fascinating! But now, suppose I'm the industry person. What's in it for me, Brynt?

Brynt: So, industry's going through somewhat of a transformation because the nature of manufacturing is changing. And we're finding that you don't necessarily need your traditional four-year-degreed student to do every task in your manufacturing floor, your fabrication facility, this high-tech environment that blends the internet of things and the

internet of people into this social network that creates the amazing products of our time.

And so, what this program allows you to do is perform a strategic talent acquisition activity where, if you have strategic reach, and you're able to reach to students prior to their decision points in higher education, you can give them a sense of purpose of what they're looking for. So, industry partners that participate in this program are going to get first dibs on the kids that will be their workforce of the future.

Mike: So, that's what's in it for me? I get access to that potential workforce.

Brynt: And you get to tell your story before they hear it from somebody else. You get to show them firsthand what you're doing in your factory, what you're doing in your manufacturing floor, in your research, in your design. And showing them all of the potential careers that they might go into, so that they're making informed decisions about that higher education experience that will lead them back to become the competitive hires you desperately need. And once you start that conveyor belt, that process, that experiential pathway, it'll keep going and keep going and keep going.

Mike: "Strategic talent acquisition." I love that kind of talk! Emily, now I'm from high school. What's in it for me?

Emily: So, this program actually does a lot for high schools. At the surface it helps really achieve a lot of career technical education learning objectives, including those that, for schools, can be difficult or complicated to achieve, such as direct industry engagement. That involves a lot of coordination between two entities that aren't necessarily talking to each other on a regular basis. FlexFactor comes in and takes care of all of that. So, it is a very simple turnkey solution for both the industry partner and the school partner.

In a sort of broader sense, I think the program provides an alternative learning structure for teachers to ensure that their students are meeting their learning objectives, but are able to do so in a way that allows students to learn using subjects that they're really interested in, because students define the subject area.

And the one thing we haven't mentioned yet is that the program can layer on top of any class. So, we're able to achieve these same learning objectives and able to expose students to these same transformative experiences. And we can do it as well in an English language development class as we can in a robotics class.

Mike: Very interesting. So, if you think about it, as you just said, it can be any class or classroom that can take advantage of this FlexFactor program.

Emily: Exactly.

Mike: Hmmm. Let me ask you a little bit about the event today, here in San Jose. We had a fascinating experience this morning because we visited, of all places, the San Francisco 49ers stadium and we went behind the scenes. It was pretty unique, Brynt.

Brynt: It was! And what we have tried to put together is a community of interest of industry partners which are your non-traditional suspects in a lot of cases. So, we have partners that are actually doing production of robotic devices for warehouse floors, or contract manufacturers, or materials companies. And kids can go there and see some amazing things. But what's interesting also is that times [inaudible] to take kids to see who are the consumers of these types of products.

And that's what we're able to do today with the gracious support of the San Francisco 49ers, so that the kids could understand what are those elements a team has to think about as an organization for player safety, for player performance, for fan experience, for fan safety, for the running of this incredibly complex operation. And what are the products that are being manufactured to solve the problems of an organization like this that really transcend to other areas as well? The kids got to see that firsthand today, and then come back here, think of the problems, and develop their own product concepts that would solve those challenges faced by a group like the 49ers.

Mike: Emily, will you tell us a little bit more—because I think this is really unique—about the type of students that were here today at FlexFactor?

Emily: So, today we did have English Language Development students who have moved to the United States fairly recently, and they have between 5% and 60% proficiency in

the English language. And they are an incredibly rewarding group to take through the program, because you can see them literally expand their skills in front of you: their reading comprehension, their verbal abilities, and then just their sense of confidence in themselves. After they pitch, you can see these students realize that they're capable of things that they had no idea they were capable of before.

Mike: And I hope, from what I saw, that they might start seeing themselves in a career, in a position, in a field, where they can contribute.

Emily: And that's the whole goal of the program: to give students an experience that allows them to understand exactly what you just said.

Mike: Brynt, if I was to come to you and Emily and say, "I'd be interested in thinking about how to adapt FlexFactor in my community." What would be my steps? What would I do?

Brynt: Well, I think it boils down to one wanting to make a difference. It comes down to you can't just distill this problem down to an application. It has to be something that you're willing to roll up your sleeves and do the work for. And most people are willing to do that, and they're trying to do that. And what this does is helps those types of organizations, who are doing great things, amplify the successes, help them connect into the other actors in that community of interest, to really see some outstanding results over time.

Mike: So, Emily, do I call you? Do I get the FlexFactor brochure? You come out and talk to me? How would I get started?

Emily: Yeah, I think the easiest way to get started would be to email one of us. After that, we literally get on the phone with you. We talk through what this process looks like: the adoption, and the pilot, and the launching. And then we come, and we hold your hand every step of the way.

Mike: We'll make sure we'll put some contact information in the Show Notes for people that want to follow that up. Brynt, there is a cost associated with this, and I don't want a number now, but tell us a little bit about how that cost works. How does one defray those expenses?

Brynt: So, there is a cost. We have approached this program as two components. One is there's an adoption cost which pays for the 120-, 180-days' worth of work it takes to get the program from "you want it" to "you actually have a pilot of students" that have gone through this mobilized ecosystem that's focused on delivering these results. And that's an upfront cost. And we work with you on a funding strategy for that.

The next step is to figure out how you're going to sustain the program over time. And we've developed a pretty innovative business model for that, where we're able to operate in a cost-share approach in the ecosystems that we've implemented. And it generally approaches a cost-neutral status in about a year or two, wherever it's implemented.

Mike: Brynt, you've talked about "what's in it for industry." But can you be more specific? Can you give me some examples of partners you've worked with?

Brynt: I can. We've had some amazing industry partners that have been part of this program from the very beginning, and then those that have come in along the way, as we've expanded the program into other parts of the country over time.

One of the first initial partners at the table was Jabil—amazing company that makes many of the products that we have in our homes. Anything with an on/off button probably has a Jabil thumbprint on it at some point in its supply chain. They were able to bring over 700 students into their company last year in a series of 1 to 2 visits per week from students across the country. FlexFactor program brings the students to them. They're able to see what Jabil does in its Customer Discovery Center and learn about the programs and the products that they make and offer over time.

DuPont has been an amazing partner in the program with their new Silicon Valley Technology Center that they've created. And there's many companies across the country.

We've had small startups, like Fetch Robotics, that have brought students into their program. Every time a student goes through one of these companies, they end up asking themselves the question, "What do I need to learn to work here one day?" And we know, at that point, we have achieved

many of those goals of informing, attracting, inspiring, and recruiting them into those pathways in that future.

I want to talk about Boeing. We are at the culmination of an adoption process with Boeing in Huntsville, AL where, towards the middle of last year, we started having the conversations. They're interested in this as a strategic talent acquisition activity in the Huntsville region. We partnered with both the Drake State and Calhoun Community Colleges in a similar relationship that Evergreen Valley College has done here in San Jose and Moraine County Community College in Ohio to reach out to the local school systems in Huntsville and the Huntsville region, to introduce students to the technology aspects that Boeing is working on, to recruit them into the colleges in the area, and ultimately serve as the hires that companies like Boeing and Polaris and Toyota and others in that region need over time. And all of those companies see value in reaching out to new students well before they make their decisions in those institutions of higher education.

Mike: Well, today, folks you've heard a unique approach that industry is taking to working with education to really drive that future technical workforce. We're going to turn now to an interview with a student who has been part of FlexFactor and then we'll wrap up. Brynt and Emily, thank you very much for joining today. It's just been a great experience being here.

Brynt: Thank you, Mike.

Emily: Thank you.

[music]

Mike: I'm here in San Jose with Tate. He's a graduate of the FlexFactor program. Tate, where are you in your school right now? Where are you in your education?

Tate: Right now, I am a junior in high school and a freshman in college through dual enrollment.

Mike: Excellent! What inspired you originally, before this all started, to go into FlexFactor?

Tate: Originally, it was through one of my classes in high school: AP Biology. And a professor of mine introduced the FlexFactor program to me, and started discussing what it was about, because engineering was something that I had always really been interested in. I had been part of a

robotics team beforehand, and I was kind of wanting more than the average classroom had to offer. So, it was something that I was looking forward to throughout the year.

Mike: And did you find it? Did it give you more than your average classroom?

Tate: I would say so, yeah, because I currently know a lot more about electronics than I ever did before. And I feel like it has opened a lot of doors for me, career-wise.

Mike: Tate, as a result of being at FlexFactor, what decisions did you make? What actions did you take?

Tate: One of the actions that I decided to take was "dual enrollment" in both high school and college. I saw that as primarily an opportunity to increase the rate of information I was gaining, and rate of education, in general. And by taking dual enrollment classes in both high school and college, that essentially allowed me to increase my "stride size" on education and kind of take an alternate, faster route that I wouldn't get through traditional high school.

Mike: Excellent. Thank you again, Tate.

Tate: Thank you for having me.

Mike: Folks you know at the end of every podcast, we encourage you to take action. I'm going to ask Brynt to tell us what that action should be.

Brynt: So, if you're a college President, a Vice President, a Dean, if you're anyone that is working at the college, and you're aware of the great pathways that you have developed that are tied to industry demand in your area, then give us a call. Send us an email. Let's set up a 30-minute conversation on how FlexFactor can be adopted very easily into your ecosystem as a means to have those busloads, and busloads, and busloads of students show up to your school informed about industry, and motivated to take the pathways that you have to offer them to find their way to those great jobs of the future.

Mike: Thank you, Brynt.

Brynt: Thank you, Mike.

[music]

Mike: That's it for today listeners: taking a journey to the
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