Ramona Schindelheim, WorkingNation editor-in-chief:

You're 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.

Mikeal Vaughn, Urban Coders Guilds:

Tulsa is really positioning as the next tech entrepreneurship hub. And it's really important that our kiddos have the skills, the resources, the opportunities to join this new ecosystem that we're building.

Ramona Schindelheim, WorkingNation editor-in-chief:

In the first episode of Destination Tulsa: Tech Hub in the Heartland, we explored how this city once known mostly for oil, gas, and aerospace now has big plans to be a major player in several technology fields to do that stakeholders from the Oklahoma governor to Tulsa's core universities, to its entrepreneurial ecosystem are working together with the help of the Tulsa Innovation Labs to take a coordinated approach to tech growth. As tech jobs increase, skilled workers are needed to fill them. Tulsa is blessed with several major research universities that are meeting that challenge, and we'll be meeting some professors and students in later episodes. In this episode, we look at educational opportunities helping Tulsans and some very young Tulsans get a start in tech. What's more, the leaders of schools and workshops are invested in making sure those tech careers are achievable for everyone.

Libby Ediger, Holberton School of Tulsa:

We, as a school ended up in Tulsa because of so much of the work that's being done across the city to reinvent what it looks like to be able to join into the tech community from a place that you isn't Silicon Valley.

Ramona Schindelheim, WorkingNation editor-in-chief:

That's Libby Ediger, executive director of the Holberton School of Tulsa. She explains how Holberton as a vocational school is filling an important niche in Tulsa, helping the city build a skilled tech workforce, but a workforce that might not need a four year degree. Holberton is actually a global network of software engineering schools with a presence now on 32 campuses in 20 different countries.

Libby Ediger, Holberton School of Tulsa:

If I was in front of a whiteboard and we were on campus, I would draw you a venn diagram. One of those circles being a four year degree opportunity and the other circle being the kind of explosion of boot camps from the last decade, the Lauren Python in eight weeks or 12 weeks type model. And at Holberton, we like to think of ourselves as the overlap of those two options, where our program can still take less time than an associate's degree to complete. We're far more focused on one's specific vocation. In this case, it's software development, but we have our students for anywhere from 12 to 20 months. And so instead of just giving them one or two programming languages to try and go find work with we're actually starting students from square one and building a strong foundation in the fundamentals of software engineering with the aim of not just getting them that first job, but of actually setting them up for a career in this industry.

Ramona Schindelheim, WorkingNation editor-in-chief:

Holberton was incorporated in 2019 when the state of Oklahoma only graduated 500 software engineers. Right now in Tulsa, there are 100 students and Ediger expects that to grow.

Libby Ediger, Holberton School of Tulsa:

So if we could get up to a place where we've got 400, 500 students a year, we could seriously increase the competitiveness of what a city like Tulsa, what a state like Oklahoma can offer employers in terms of talent coming out year over year.

Ramona Schindelheim, WorkingNation editor-in-chief:

Ediger says there are three types of students who might find Holberton, an attractive alternative to a traditional college or university.

Libby Ediger, Holberton School of Tulsa:

The first is what we would call a career starter. Someone who's 18 to 25, is still grappling with what they want to do, what profession they want to enter into. Most of them have no college experience. And for whatever reason, they're attracted to technology or to software development, or maybe it's through gaming and the gaming industry. The second is someone who's switching careers entirely. And I think over the last 20 or so months, we really have seen industries turned upside down because of the pandemic. And so maybe it's that someone lost their job because of the pandemic, maybe their particular job or role is being automated away by technology, or perhaps it's driven by their financial situation. They're capped in their earning potential. They're not happy with what economic opportunity is provided by their current career. And they say, you know what? I want to go back to school and I want to do a hard pivot and try something new.

Libby Ediger, Holberton School of Tulsa:

And Holberton is a great option because of the length of the program, not being four years, like going back to college would be. We become a lot more accessible and a lot more feasible to more students. And that third bucket of possible students is what we call an industry accelerator. And that someone who has been around technology, but didn't actually have these software development skills. And that could look like anything from maybe they were in a hardware job. We've had folks come to us that came from more IT background. Maybe they were laying cable or had something to do with the technology field, but they recognize that the flexibility that comes with being a software developer, it's just huge. That you can work remote, that you can work part-time or full-time.

Ramona Schindelheim, WorkingNation editor-in-chief:

In just the last year, IT job postings in Tulsa have increased by almost one third. A lot of those jobs require a bachelor's degree at minimum, but not all of them. There are direct pipelines to employment from the University of Oklahoma, Oklahoma State University, and the University of Tulsa. Tulsa Community College, or TCC, like many community colleges is a feeder to the four year universities. But with Tulsa's new emphasis on building a tech workforce quickly, TCC has been working on other ways of giving students a leg up in tech. Pete Selden is vice president for workforce development at TCC. He says the college has several pathways to a career.

Pete Selden, Tulsa Community College:

And those consist of our associative of applied science degree programs, as well as our short term certificate programs, where often we will also embed industry recognized credentials. So we know that we have an obligation to prepare students for the tech sector for more entry to mid-level jobs, as well as for those bachelor degree pathways.

Ramona Schindelheim, WorkingNation editor-in-chief:

Selden says the IT focus is branching out into newer growth areas in tech.

Pete Selden, Tulsa Community College:

We're working on some strategic program development around cyber security and data analytics. We previously had IT programs, but not really focused on cyber security skills at the level that they need to be at for our local employers. And then data analytics is a new area for us to develop programming around. So we've been working with employer partners as well as some of our workforce agencies and other entities such as Tulsa Innovation Labs to create programs that are focused more on IT security skills, as well as data analytics. Those are everything from short term bootcamp programs, bridge programs into those programs, as well as further developing those bachelor degree pathways so that we can meet employers at the various levels that they're going to need to develop workforce in.

Ramona Schindelheim, WorkingNation editor-in-chief:

And TCC is making an even bigger push for diversity and inclusion to help more Tulsans forge a pathway to good tech jobs. Leigh Goodson is TCCs president and CEO.

Leigh Goodson, Tulsa Community College:

Historically students of color and other marginalized populations have not been equally recruited to high wage careers. There is evidence that oftentimes when student comes in somewhat under prepared, which can sometimes be the case for minority students, depending on what their background was and what educational opportunities they had, they get tracked into careers that don't pay as well. And so what we do at Tulsa Community College is wrap students with support services so that students can look at all opportunities that they may want to consider. Not just a few that maybe they definitely think that they could pull off right now, given their preparedness.

Leigh Goodson, Tulsa Community College:

We have tutors, we have tutoring centers, we have success coaches. And oftentimes in the public K12 system, there's so much stress on the public K12 system that the focus is on graduation. For the tech fields sometimes there's more math than what's minimally required in high school that would be beneficial for a student or more science that would be beneficial. Students come in with a varied level of preparedness, and we want to get those students to a prepared level so that they can choose any career that they desire.

Ramona Schindelheim, WorkingNation editor-in-chief:

And Selden says, whether students go to a tech job right away, or whether they go to a university, TCC wants to keep them in Tulsa. And they do this through initiatives like campus Tulsa, an internship program that not only gives students real job skills, but also offers networking and social events so that students build or renew their connection to the city.

Pete Selden, Tulsa Community College:

The more we can connect students to employers and employers to students as part of their educational experience, the better we can show that there is a network, a professional network here. There are opportunities that students need that exist right here in Tulsa for them to thrive in their professional career.

Ramona Schindelheim, WorkingNation editor-in-chief:

The tech industry is notorious for its lack of diversity. Few tech companies have a workforce that mirrors the US population. And while it's been getting a little better, women and people of color are still woefully underrepresented in the field. There are some teachers, administrators, and community leaders in Tulsa who are trying to correct that imbalance. And they're starting with getting a diverse group of young Tulsans interested in tech.

Speaker 6:

What'd you do today, Isabel?

Isabel, Girl Scout cybersecurity student:

I learned about computers and how to be safe online.

Ramona Schindelheim, WorkingNation editor-in-chief:

Isabel is a Girl Scout. She's taking her first tech class. She's part of a program run through the Girl Scouts of Eastern Oklahoma, which is teaching basic skills all the way up to cybersecurity tech for the teen Scouts.

Sal Aurigemma, University of Tulsa:

We need to get these young girls aware of not only the opportunities in stem, but the fact that you can't live in today's modern society without having your information, either being leaked or protected. And you want to make sure that you're making good decisions.

Ramona Schindelheim, WorkingNation editor-in-chief:

That's Sal Aurigemma. He's been leading the girl Scouts coding program for five years. His day job is an associate professor of computer information systems at the University of Tulsa.

Sal Aurigemma, University of Tulsa:

But really what we're trying to do is introduce them to the concepts, not necessarily how to do encryption, but why do we care about it? Or the ethics behind how we use information because that's a privacy and a security thing mixed together. So why do we start at five years old? We want them to understand these concepts at the simplest level we can, and then if they get more interested, they go, okay, well, I think I understand why it's so important that certain information needs to be kept secret. How can we do that? Can I do that? It's too hard for a girl, right? You're like, of course not, it's not too hard for a girl because some of the best computer scientists we had in the beginning of computer science and cryptography were women. And hopefully they get the bug to want to do that too.

Sal Aurigemma, University of Tulsa:

But yeah, we're not looking at that hardcore tech hacking techniques with five year olds. We're just trying to get to information. What is confidentiality? What is availability? What is integrity? And put it in a language and have them do tasks that make sense to them to process it in their young brain.

Ramona Schindelheim, WorkingNation editor-in-chief:

It was some students in the University of Tulsa's business college, former Girl Scouts who approached Aurigemma with an idea to expose Girl Scouts in the Northeastern, Oklahoma to STEM and coding.

Sal Aurigemma, University of Tulsa:

I said, well, that'd be fantastic if they'd help me lead it, because I could teach code, but I was used to teaching at the college level. So it was a really interesting learning experience working with these girls who had been through the program as well as some scout leaders that came in to help us to develop what we were doing. Yeah. About five years ago we started, did a couple of coding camps. We did that for two years. We did about two coding camps for a semester, primarily focused on Hour of Code. And what we would do is we'd bring in groups of 20 to 50 girls at a time and we'd have student volunteers help the girls go through different Hour of Code challenges, whether it's one of the Disney princess games or Minecraft or something like that. And we'd help them try to understand the basic fundamentals using Hour of Code as the primary tool to do that.

Sal Aurigemma, University of Tulsa:

And eventually we went a little bit beyond that, where we started working on coding badges by introducing basic coding concepts and then having the students kind of walk through us creating our own little number guessing game, where we have the computer choose a random number between an upper and a lower limit. And then the student guesses a number and you eventually, you get down to the right answer. We walk through how to write a program like that and then get ideas from the students on how to make it better, how to make it more fun for them to use this, creating a simple game like that to help the students understand the fundamental concepts of coding and that it's not just always boring, old coding stuff.

Ramona Schindelheim, WorkingNation editor-in-chief:

For the younger Scouts instructors, introduce computer basics and eventually walk them through how to write a simple program and how to make it better.

Speaker 10:

This right here is called the hard drive. So this is where all the long term memory is stored. So like your memories from the past few Christmases, those type of things, that's what kind of would be stored on the hard drive. So memories you don't access too often.

Ramona Schindelheim, WorkingNation editor-in-chief:

About four years ago Aurigemma and the Girl Scouts of Eastern Oklahoma started the first cybersecurity badge workshop. Between the coding workshops and the cybersecurity badge workshops over 1,000 local area, Girl Scouts between ages five and 17 have come through the University of Tulsa.

Sal Aurigemma, University of Tulsa:

Explaining to a five year old, what encryption is and hiding things, it's different than when you're teaching a college student, but if you do it the right way, a five year old can get it, Hey, I have a secret. I'm going to wrap that secret in like different boxes and packages and then let them do it themselves. And then say, okay, can you guess what's inside the package? No. Well that's encryption. Well, how do you take it apart? That's your decryption process. So it's kind of everything from, how does the fundamentals of protecting security work to why do we even need to worry about it? And including things like ethics, like what is privacy? And if you saw your parents' password, are you allowed to use that? What if it's your teacher's password and you could change your grade or your friend does it. So even technical details related to cybersecurity. The Girl Scouts have a badge system to at least introduce these fundamental topics at various ages.

Speaker 10:

We're going to be watching a quick video. And then afterwards we're going to talk about some ways that you all can be safe while using the internet, because I know we're all using the internet more because of COVID.

Ramona Schindelheim, WorkingNation editor-in-chief:

The classes are staffed by volunteers. Many of them college women. Aurigemma says the Girl Scouts look up to them as role models.

Sal Aurigemma, University of Tulsa:

A lot of our volunteers they'll be working at companies. Maybe they just graduated from college a year or two earlier, but they were Girl Scouts and now they're coming back and they're like, oh, I could tell you a story about, I really do have an engineering degree. I really do have a CIS degree. And I am doing really good stuff related to programming, or development, or security every day while I'm at work and I'm getting paid really well to do it. And those kind of interactions when the Girl Scouts can see someone that's like their sister's age or maybe their young mom's age, that kind of thing, that really does have an impact. And if we can do something to help bring that to Girl Scouts, we are anticipating that the future workforce is going to have some of these girls that go to these workshops. And they're either going to come to our college or another college or they'll go into the military or they just go straight into work and they'll be better off for it.

Quentin, Urban Coders Union student:

I want to start my own business. I want to create my own website, like have everything. It's just going to be like a gaming app basically.

Ramona Schindelheim, WorkingNation editor-in-chief:

Quentin Robuck is 15 and in high school. I spoke to him during a Monday evening workshop on the Oklahoma State University campus called the Urban Coders Guild. Urban Coders is a nonprofit organization and its mission is to reach students who are underserved and underrepresented in the Tulsa area. It's a free workshop, teaching web and app development to middle school and high schoolers two nights a week. The students even get a laptop to keep. But it's not just about learning technologies, it's about opening up opportunities and showing students that some tech careers are more accessible than they think.

Quentin, Urban Coders Union student:

It's fascinating how much you learn in one single day, like an hour and 30 minutes, because I learn so much from then compared to like anything else I do. And I actually pay attention to what I do with this.

Ramona Schindelheim, WorkingNation editor-in-chief:

Tonight they're learning to build a mobile app.

Will Smith, Urban Coders Guild instructor:

You need to select all of the code from the word extension all the way down and copy it. We all remember how to copy, command C.

Ramona Schindelheim, WorkingNation editor-in-chief:

Will Smith is tonight's instructor. For more than two decades he's been teaching mobile app development at Tulsa Community College. He's been volunteering for Urban Coders Guild for two years.

Will Smith, Urban Coders Guild instructor:

For me, it's just to help facilitate these young minds who usually don't have a chance to get exposed to this sort of software development to help them understand that this is a dream that's very possible for them and to challenge them to reach for that dream if they so desire. The idea is these young folks could be the entrepreneurs of the future and we want to give them some skills to help them.

Ramona Schindelheim, WorkingNation editor-in-chief:

And it's not just different aspects of coding, they'll also be hearing from special guests talking about business presentation and project management.

Mikeal Vaughn, Urban Coders Guilds:

My name is Mikeal Vaughn, founder and executive director of Urban Coders Guild. Urban Coders Guild is a nonprofit organization that is committed to computer science education, access, and resources for the traditionally historically underserved and underrepresented students primarily based here in the Tulsa area. I'm a native son of North Tulsa, Oklahoma, which is the historically black community here in Tulsa.

Ramona Schindelheim, WorkingNation editor-in-chief:

Vaughn says as a kid, he was a science and space geek. In 2016, after working for several years in Japan, he decided to come back home.

Mikeal Vaughn, Urban Coders Guilds:

And be able to provide those same experiences, those same opportunities to kids who look like me really, and who come from communities like my own. Tulsa is really positioning as the next tech entrepreneurship hub. And it's really important that our kiddos have the skills, the resources, the opportunities to join this new ecosystem that we're building and to be able to participate fully and to thrive in this city that we're building. We don't have any placement tests or hard criteria other than a commitment. Our students meet over 100 hours over the course of a school year.

Mikeal Vaughn, Urban Coders Guilds:

So there's the time commitment. And then of course there is a certain level of resilience, a level of grit, a level of curiosity. Some days they're going to come in and start building their mobile apps or their websites, and it's going to be all green lights. Everything is going to be easy. And they're going to be some days when they come in and it's going to be a struggle and they won't have anything to show for their that time that day. But being able to know like, Hey, I'm going to come back, I'm going to finish. I'm going to get the help that I need to move forward.

Ramona Schindelheim, WorkingNation editor-in-chief:

Quentin's mother says, he's learning how to be creative with technology. Something that he wouldn't be able to learn in a traditional classroom. She says that can open him up to opportunities down the road.

Shandé, Quentin's mother:

Honestly, he was really excited because he can see his work being brought to life. It's something that he wouldn't have been afforded to just because of the public schools don't allow that type of stuff. So just to have that after school and it make it affordable, for free is a real, that's a plus. So now he said that that's what he wants to do, is he wants to code for a career.

Ramona Schindelheim, WorkingNation editor-in-chief:

You've been listening to the second episode in a special series for the Work in Progress Podcasts, Destination Tulsa: Tech Hub in the Heartland. In the next three episodes, we'll explore how some students are planning for careers in high growth tech fields, how some entrepreneurs got their start, and follow a drone that collects weather data. Destination Tulsa was written and produced by Larry Buhl. I'm Ramona Schindelheim, editor in chief of WorkingNation and the host of the Work In Progress Podcast.