**WorkforceGPS**

**Transcript of Webinar**

**Steering the Delorean: How Do I Make Sense of the Future of Work?**

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LAURA CASERTANO: I want to welcome everyone to today's Virtual Institute session, "Steering the DeLorean: How Do I Make Sense of the Future of Work?" Again, if you haven't done so already, please introduce yourself in that chat box on the bottom left-hand corner of your screen.

And now, I'm going to turn things over to your moderator today, Danielle Kittrell. She's a workforce analyst with the Employment and Training Administration, U.S. Department of Labor. She's going to take us through our first poll. Danielle, take it away.

DANIELLE KITTRELL: Well, thank you so much, Laura. And good afternoon, everybody. I hope you are well. To get things started, we have a little warm-up for you, a polling question. And some of you guys have already done it, but as you can see, to what degree do you feel that the industries and jobs in your region are changing due to factors associated with the future of work? Is it extensive, do you think, maybe quite a bit, here and there, not much change so far, or no changes that you're aware of? Let us know in the chat box there with the polling question.

All right. Some of you saying quite a bit. Interesting. A lot of you are saying quite a bit right now. Here and there. Only one extensive. Interesting. All right. Well, we can move on.

So again, I am Danielle Kittrell. I am a workforce analyst here at the national office in the Employment and Training Administration, and I will be your moderator for today.

I am so happy to introduce Matthew Poland who is a senior program manager at JFF. He will be your facilitator for today's presentation. Always glad to have you, Matt.

Now, we have three wonderful grantee speakers today from Chippewa Valley Technical College. Ladies first. So I am happy to introduce Julie Sherman who is the consortium project director. I'd also like to introduce Jeff Sullivan. He is the dean of skilled trades and engineering, as well as Doug Olson, an employment engagement specialist. So we're so happy to have all three speakers today.

So with that I won't prolong it. I will go ahead and pass things over to Matt to talk about the agenda. Matt, take it away.

MATTHEW POLAND: Great. Thanks, Danielle. And so if we go to the next slide here, so we are just doing our introduction right now. I will spend about 15 minutes on framing up the future of work for all of you, and then we're going to turn to Chippewa Valley to talk about their approach to future of work. I think they've been doing some really interesting things in looking at that, which is why we invited them on the call.

And then after that we'll spend about 15 minutes doing some moderated Q and A. You guys will have a chance to ask your questions, what you've been wondering about with the future of work, questions about our presentations, or just questions in general about how you can work on that or approach it. And then we'll spend a few minutes at the end wrapping up.

So to frame up this conversation and keeping in the theme of steering our DeLorean, if we go back to 2013, go back about six years where I personally have sort of set a marker of where we started having this modern conversation about the future of work in 2013, and the first few years of it were will automation lead to rapid, massive job elimination? Are we looking at workers getting replaced very quickly, overnight, within a few years, and massive unemployment?

A lot of the research kind of centered around this, and so see the DeLorean turning into the flame tracks, as in the movie [inaudible] disappearing, jobs disappearing; right? So we had papers come out like Frey and Osborne in 2013 talking about 47 percent of U.S. employment being at risk for automation. That's an oft-quoted research paper. Frey and Osborne have actually since then walked back that figure a little bit, but I still see it show up in articles and everything about future of work.

And then there was also a really landmark piece by Eric Brynjolfsson and McAffee called the -- well, Brynjolfsson wrote a book about it called The Second Machine Age where he talked quite a bit about how much is at risk for automation and that this new wave of technology really -- really kind of poses a great risk to the economy and our jobs because there's so many simple and repetitive tasks within jobs that can be re- -- can be done by machines, can be automated by either a robot or an AI or some piece of automated technology. And it's something -- it's the next sort of evolution of our economy and something that we should be worried about and be paying close attention to.

You also during this time had the other side of the argument that, hey, every time we've had rounds of new technology come through, it hasn't really led to massive unemployment. We had PCs start to become more ubiquitous in the '80s through the '90s, and it only helped people become more productive. In fact, these waves of technology in the past have created jobs, not destroyed them, or they created more. They may have destroyed a few, but they've always created more. There's always been a net increase in jobs when we have new technology that the -- that is introduced to the economy and the workplace.

Number of -- another stat that you'll hear quoted quite a bit is when ATMs became ubiquitous, that tellers were going to all lose their jobs. That didn't happen. Actually, there was an increased number of tellers. There was an increase in the number of brick and mortar banks. There wasn't -- that job didn't go away as we all thought it would.

There was also an OECD study, and I have all of this stuff, by the way, linked at the very end of the presentation which you can download. There's a link there to download it, if you're interested in any of these individual studies throughout the -- it's on the last couple of slides.

The OECD also in this time frame said that probably it's unlikely a lot of jobs will be destroyed, but in this time frame 2013 to 2016, that's what the conversation was about. How many jobs are going to be destroyed, and how quickly will that happen?

In the last few years -- last couple years, it's really been more about how much will jobs change? I think we've started to move past the how -- how many jobs are going to be eliminated and replaced that there's some agreement that jobs are certainly at risk for changing significantly, and that's what we should be focused on.

So here's the DeLorean when Doc Brown upgraded it with its trash compactor and its floating -- so it could fly through the air. So this is really what we should be focused on in the job market is how will jobs change? I'm going to spend a little bit more time going into detail on those more recent studies.

So McKinsey put out a landmark piece here in 2017 talking about how up to 50 percent of work tasks could be automated with current technology and that 60 percent of these work tasks across all industries, across all jobs, have at least -- I'm sorry. 60 percent of the jobs have 30 percent of the activities that can be automated. So they act- -- they broke all the jobs down into individual tasks on each job and then decided how much of those could be automated and found that it was quite a bit.

And that if -- and by 2030 -- and this is a cumulative number. I think they were mentioning it's from about 20- -- the year 2016 through the year 2030, as many as 166 million in the U.S. will need to change jobs. I think they also sort of mean that they'll have to reskill or upskill. They don't necessarily have to leave their job. They're going to have to upskill, and their job's going to be very different.

And if there was a little bit of a warning in that data, it was this, that if we don't reskill and we don't help them learn -- the workers in the current jobs to learn new tasks, they did predict that there could be high unemployment but not because the job was eliminated but because the worker was not upgraded fast enough to meet the demands of the new job because some of the tasks on the job, some -- and sometimes up to 30 percent or more of the job changes because it's taken over by a machine or a piece of technology and the worker has to learn new tasks.

So if anything in the McKinsey research was sort of alarmist, I think it was this, that it's really important to be focused on this for the sake of reskilling or upskilling workers as quickly as possible.

So in their research, which I rea- -- I highly encourage you to read, they've done McKinsey World Economic Forum, which I'll get to in a moment. Peterson has been paying attention to this on the sort of macro-economic level for quite some time now and has some really good information on this.

So in this particular 2017 piece, the types of jobs that they think -- that have activities like logical reasoning, optimizing and planning, social and emotional sensing, those kind of tasks are going to be more prevalent on jobs. So if there's a job that requires that, those things are less likely to be automated, those types of tasks.

The ones that are in the middle where the jobs require retrieving information and recognizing known patterns or gross and fine motor skills, they're at least in part -- those jobs are partially at risk for automation and the job's likely to change and the worker is going to have to take on new tasks and learn new things. And then that did decrease in activity. So jobs that are very reliant on collecting, processing data, predictable physical activities, they're the most at risk, obviously. These are things that machines can do really well without much human interaction and might -- if we lose jobs, it will be jobs that are mostly these types of activities.

So the World Economic Forum has also been looking at this on an international scale and that in 2018 they found that 50 percent of companies expect that automation will lead to some reduction in the workforce by 2022. But 38 percent of businesses expect to extend their workforce, and more than 25 percent expect automation to lead to creation of new roles in their enterprise.

So one way to approach this -- and I'll go into more detail on it in a moment when I talk about some of JFF's research on this -- is really trying to think about encouraging business to think about automation as augmenting the workforce and helping increase productivity of the workers, not replacing them. And there's a lot of businesses that are already thinking that, but I think there's still sort of a deep engrained cultural element to automation of thinking about it as replacing, instead of human labor, machine and AI labor. And instead, we can be thinking about how they can work together.

I don't think I put it in this particular presentation, but MIT did a study that compared human labor -- solely human labor to solely machine labor and then a third group which was machines and humans working together. And the machines and humans working together outperformed either machines alone or humans alone. So there is evidence out there that humans augmented with technology is the best option, not replacing humans with technology.

And then the final point on the 2018 report, that by 2022 no less than 54 percent of all employees will require significant re- and upskilling, similar to what McKinsey had found, that we really need to be focused in how fast and how much quality we put into reskilling and upskilling folks that are at risk for automation.

And then in 2019 World Economic Forum this year put out another report that went into a little more detail on how -- what the strategy might look like for building a skills-based labor market. And a few -- I just pulled out a couple of their recommendations. The first one was build, adapt, and certify foundational skills.

And the report says that there's a need for completing the focus -- I'm sorry -- complementing the focus on basic literacies with a focus on social-emotional skills such as emotional intelligence and skills such as active learning, complex problem solving, inductive and deductive reasoning, and digital fluency. So these are all things that will help folks work with technology better, things that machines so far are not good at doing on their own, that these tasks are much better when machines are supplementing human labor.

And then one of the other recommendations I thought was really useful was driving momentum around the concept of skills and move from a focus on knowledge and facts to skill development. There's still, as many of you I'm sure are aware, focus in education on memorizing facts and passing tests. And they're making the argument here that, because of where our economy is going and because of these future work issues, we need to be so much more focused on skill development than trying to -- than real memorization of facts.

And so I'm going -- for the sake of time, I'm going to skip ahead to the next section. So last year JFF worked with a couple of workforce boards in San Bernardino and the Tulare-Kings region in California to bring together a couple groups of businesses in a project we called Talent Development in the Future. And we brought them together to try to figure out what's actually happening on the ground.

Now, the McKinsey and World Economic Forum reports did include surveys of businesses, but it was really hard to tell at ground level what's happening in the business community, what's happening in individual businesses, and how should education and workforce respond? And so we've been very focused on trying to figure out how do we make all of this report -- macro-economic reports and blogging and events and the future work usable for folks like you guys on the ground trying to help workers upskill, trying to help them pick up the right skills they're going to need for the future. And here are some of the recommendations that we came up with.

So going back to talking -- when I was talking about seeing automation as complementary or augmenting human labor, what we noticed from this -- and this is sort of the number one recommendation there, approaching business as business advisors, that a lot of these businesses, particularly the smaller they were, didn't have this all figured out, didn't have it -- didn't know how much new technology they wanted to bring in or how they were going to manage their workforce or reskill their up force -- their workforce.

And so this is a great opportunity for schools and colleges and workforce boards to be involved with businesses and helping them make this -- these decisions, not sitting back and waiting to see what they do and then reacting to it but being involved with them in the decision making process as they're trying to decide what kind of technology they want to implement, how that's going to impact their business.

There's a lot of resources out there for all of us to learn a little bit about automation and technology, just enough so we know what kind of skills it's going to require and various technology require so that we can help them with making better decisions there.

Second one was recognizing and promoting employability skills as essential skills. So I -- what we saw was that, based on the research and what we were hearing from the businesses, that 21st century skills or employability skills or like it says in the World Economic Forum report, the -- they call them foundational skills, are -- it's just another reason that they're so much more important.

Some of the businesses were saying it's much more useful for us to have an employee who understands the whole business, not just their piece of it, not just their part of the production line but where it comes from before it comes to them on the production line, where it goes after so that we can cross-train them and move them in different departments. And it's much more valuable for us to have someone that can solve a problem on their own rather than asking for their manager or something when something goes wrong. And so problem solving skills are always a key foundational skill or employability skill.

We've -- we had a recommendation there about businesses investing in their internal and external talent development, and that was a recommendation geared directly at businesses. Really to survive in the future work, you're going to need to be more involved with how your talent development works in the education system, in the workforce development system, and in investing in your own incumbent workers.

We also thought this was -- reinvigorated the conversation around work-based learning and how important it is for people to get experience in the work world before they finish a program or before they finish school. If they don't, I think they're behind. I think because they're -- the work world is evolving pretty rapidly, maybe not so rapidly that there will be massive employment but rapidly enough that, if you're in your educational program and you're not getting any work experience at the same time, you're going to be behind the people that do. And so this was a -- we thought this was a place to mention how important work-based learning is again.

We talked a little bit -- and I'm going to focus [inaudible] on this one around contingent work or gig economy work because that is something that is quite prevalent in future work too. We don't know what degree the gig economy is really going to -- or how much of the market is actually going to be, but I think it's still relevant to make sure people are prepared for that type of work too.

And then we have some recommendations around policies that can support a lot of these recommendations and what I've just been talking about. And so there's a link there to our report around developing future talent, and I also wrote a future of work technologies brief for TechHire that's available on the WorkforceGPS website. So I link to it there, and I went into a little bit more depth on how certain technologies like internet of things and various types of automation might actually be impacting jobs in H-1B industries. So please check that out too.

Now, I would like to turn it over to the real experts, just like the folks -- all of you on the ground, Chippewa Valley Technical College. And so I'm going to hand it over to Julie.

JULIE SHERMAN: Thank you, Matthew. Thanks for giving us the opportunity to share what we've been doing here at CVTC. I want to give you a little background on our grant.

So we're the lead in a three-college consortium, the IMPACT grant, which stands for Interfacing Manufacturing Process and Connecting Technologies. We have -- we delivery training and skills for advanced manufacturing, IT, and broadband. So we kind of have a four-pronged approach to engaging with our workforce partners. I'm going to start out by talking about our international relationships and trade shows.

So we spent a considerable amount of time on building our international relationships. Jeff, who is going to present in a little bit, is our dean of skilled trades and engineering. He's gone to Germany and toured factories. For example, one of them was Susto (sp) which was a technical educational equipment supplier.

While he was there, he also toured vocational schools, the Shord Housen (sp) factory, which is a leading factory in applying digital automation concepts, which also had an on-site learning factory used to train the workers. This has helped in the development or the generation of ideas to increase our enrollment in our technical-based programming.

We also are in a communication and partnership agreement with New College Lanarkshire in Scotland. Earlier this year representatives from that college came her to CVTC to meet with our faculty to understand how we run our programs and how we interact with our industry partners. Some of the key takeaways from that visit were current cultural issues as well as social, economic, and equality issues. There was also a great deal of time spent on industry and our sectoral initiatives from a global perspective.

Building these international relationships has been key to seeing the latest in advanced high-quality equipment and automated processes, and we've been able to take these trends back here to CVTC and implement them.

We also find it really useful to attend trade shows. So while Jeff was over in Germany, he also attended the Hanover Fair, which is the world's largest industrial technology show, highlighting the latest initiatives and industry solutions. Within that fair there are actually five different trade shows which include industrial automation, industrial supply, and product technologies. This is a great way to learn new learning systems, training, and consulting options as well as different education solutions to meet our modern needs. While you're there you can network and look at qualifications for careers in industry.

We also attend ProMat in Chicago. That's one of the largest expos for manufacturing and supply chain professionals. There are over 1,000 exhibiters from industry, commerce, and the government and 140 different sessions with leading experts from industry to share the latest information on manufacturing and supply chain trends, technologies, and innovations. This is just a great way to network with your peers, talk with companies about the latest technology that is out there.

With that I'll turn it over to Doug. He's going to go over our second prong. Doug.

DOUG OLSON: Thank you, Julie. One of the things that I work on with the IMPACT grant is employer engagement, meaning going out and meeting with employers in our region and talking to them about their pain points, whether it's employment, automation, and how that works together.

And just to give you a little brief background about our college, we're a district that serves residents in an area that's about 120 miles wide from just east of Minneapolis to central Wisconsin. So it's a somewhat rural area, and so we're strong in manufacturing. We're strong in machining. There are businesses that build equipment, build whole machines, and, ironically, we have large corporate dairy farms that are very automated with robotic milking machines and things. So we cover a large area of automation, and it's growing rapidly. But when I say that, in a controlled manner.

So the pain points come from having people that are trained to set up the equipment and repair the equipment. So in building that relationship, we need to get to know them and their business. Fortunately, at the college we have a long history of working with businesses in our district, and so they know us in a number of different ways, whether it's through our nursing programs, whether it's through our business programs, or our manufacturing programs. So we're a partner to many of these businesses in a number of different programmatic ways.

So as we get to know them, the best way to do that is one-on-one visits with them, which I do. I go out and visit with the plant managers, senior management, in the case of the IMPACT grant, the maintenance supervisors to find out primarily what are their plans for the future. What are their automation plans, and when do they plan to do that? Along with that then, we can figure out what resources we can provide for them, for their employees, and for the management as well.

Seeing their operation in person, as I mentioned, allows us to visit with them and talk about the pain points, whether it's productivity, whether it's staffing, whether it's expanding into the automation with capital investments and how that -- how the training might go along with that to make that happen.

So in part of doing that, I mention up here the company tours, walking through that. Matthew mentioned a little earlier that one of the things you have to do is to become -- I won't use the word expert but to become knowledgeable in a number of those different areas so that, when you see a situation in the plant, you're knowledgeable enough to know how we at the college might be able to help them resolve those issues that they may have.

And he also mentioned work-based learning. I have apprenticeships up there, and I should have added to that internships. There's a two-pronged approach. With the current unemployment numbers that are out there and the record low unemployment, it's very hard to find skilled workforce.

So one of the best ways to do that is through an internship or an apprenticeship. With the apprenticeship, that approach is to take an incumbent worker who they know very well -- maybe they've been there five years. They show up ever day. They're reliable. They show an interest in improving their own skills, and they show, in the case of industrial maintenance, a mechanical ability or an interest in that. So there you can go your own, so to speak.

And so for us it's a matter of helping them understand the value of an apprenticeship program, the return on investment of paying for that training, and the number of years that they invest in that employee to get them to the journeyman level as opposed to the cost of low productivity, inefficiency, turnover of employees. So it's an area that we spend a lot of time talking to them and working with them.

The other is the internship, and that has value in a number of ways. One, as Matthew pointed out earlier, it provides additional education for the student to reinforce their learning on the job. I think back to middle school and high school. Algebra was not one of my favorite subjects, and when it's in theory, it's really hard to learn. So in this case with an internship, the theory of what they're learning in the classroom gets put to practical use when they spend time in the -- on the shop floor or in the manufacturing plant in that internship.

The other thing it allows to happen is kind of this situation where the employer gets to spend time with the student, see how they fit, the cultural fit, the technical fit, and the student gets to see how that employer or that industry might work for them. There's a lot of difference in industry just in manufacturing. So we take students out to businesses to see what food processing is versus materials manufacturing. There's a huge difference. They might have more of an interest and be attracted one direction versus the other.

So those are primarily the ways that we spend time working with the manufacturers. We bring that back. We modify our curriculum. We provide that additional education. We also have a team of business and industry professionals that put together a customized training for the employers so that they wouldn't have to necessarily go through a one- or two-year formal training program with their employees. Again, talking about those pain points. They can get some electrical or mechanical skill updates for their employees to meet the needs they have that way.

So we're flexible in working with them in a number of those ways. The IMPACT grant has allowed us to expand into m ore automation for industrial mechanics. It's been a primary focus for us with the internet of things, how broadband ties all that equipment together. The machinery talks to other machinery. We have a lot of employees that are on call, and their smartphone tells them when there's an issue with that piece of equipment. So it's really changed the game of what their skill level needs to be. So that's been our primary focus with this project.

So at this point I would turn it over to Jeff to talk about how we've made some of those things happen internally.

JEFF SULLIVAN: All right. Thanks, Doug. One thing I would say is projecting the future sometimes can be a challenge because you're not sure where companies are heading, and when this grant started compared to now, the unemployment rate is quite a bit different in this region. We're down to maybe 2.3 percent, 2 percent unemployment in our region, and companies are hiring people that may not be the -- at the greatest skill level but they need to incorporate this new technology in the process.

So we're tasked or challenged to be able to teach the new technology and the emerging technology and teach it in a variety of paths. Those can come in smaller training sessions that we offer to businesses where that could be a one-day event. That could be a pathway of having access to our open lab where a student could come in for 16 hours within a semester.

And we have curriculum that is done independently, and these have been prompted by our advisory members to create flexible pathways to send either incumbent workers with low skill or also we find our students taking advantage of apprenticeships and internships and our pathways need to be flexible based on the student's schedule.

So working with the employers, we have external advisory groups where we'll host meetings twice a year. We'll have up to 30 employers in the room and talk about trends of employment. And then we'll have to work on the curriculum and how we update the curriculum and what our pathways and procedures are going to be to implement change. We try to tie things to national certifications like the MC3 suite of certifications through Festo, and the challenge between that may be the Smart Automation Certification Alliance.

Getting our faculty trained on those technologies and getting them up to par on the technology and sending them to training to integrate that technology in our curriculum takes time because they can't just drop out of the classroom during the middle of a semester to learn. So we have to plan and map that out.

So we work with our advisory committees to project where the curriculum's going to change. We also have strategic planning meetings internally, meeting with our upper-level leadership and our program directors on how we can integrate new technology and stay ahead of the curve because we know that we're training that technician that is going to be going out into the work world two to three years from now. And so technology that's happening now, we have to be prepared for that newest technology and be able to train on that.

And the -- a new organiz- -- or the organization structures changed so much with these companies too. There's new HR directors. There's new people leading plant operations, and staying current with those contacts has been a challenge. That's one thing that I think I've found to be one of the most challenging is staying in touch with the key contacts in those businesses. And sometimes the technology they're integrating they're not willing to share out in that advisory format because it's a competitive advantage to them. And so having those one-on-one discussions at their place of employment has been really eye-opening for me and getting our faculty out on the shop floor too to see how that technology's been integrated.

We've looked at giving our faculty academic load for almost a sabbatical situation where they can go out and gather information around how the technology's being incorporated and how the technicians are interacting with that technology and then bringing back and developing it into a curriculum package.

Our importance finding relevance in that technology and how it's being integrated I think is really, really what we're keying on now. So those business tours, where people are landing in the career field of maintenance technician is something that we're striving for this year, and we're trying to visit as many businesses as possible.

We also, if we go ahead to the next slide, try to get our students involved in seeing where the technology is incorporated from their perspective. So the view of what manufacturing is and what some of these advanced careers are could be more of a history lesson when they're going through things at a high school setting, talking more about what Henry Ford was doing and how manufacturing is dirty and dangerous. And it's important for us to get that mindset adjusted and sending students out to businesses that are going to represent what the future manufacturing looks like.

We do things on Manufacturing Day coming up October 4th where we provide tours. We collaborate with area businesses where people can tour those businesses and see the most advanced technology in action and how those environments are, what technology they'll be interacting with. Students go to the PACK expo, depending on where that is, Chicago or Los Angeles, out of our programs.

We go to IMTS in Chicago with a group of students every year to show some relevance and then having youth camps or experiences or boot camps on our campus too where somebody can take a week and be exposed at a -- probably a more controlled level so they're not overwhelmed with technology but they get an exposure to the technology to see if that's a good fit for them. Even if they have the mechanical aptitude and interest, that's a good starting point for us to sell careers in these fields.

We also have a partnership with 3M called the maps partnership where our goal is to grow the pool of technicians in the region, and we've collaborated. We have a mobile lab that we can take out to area schools and businesses in the rural setting to take some of this equipment and technology out in order to gain exposure and maybe create transcript and credit agreements with area high schools where a student can get into the pathway of our industrial maintenance program here at Chippewa Valley Technical College.

I think we're probably up for the Q&A now.

MR. POLAND: Great. Thanks, everybody at CVTC. It was really interesting stuff that you have going on there. And so we -- as you guys are thinking about your questions, please go ahead and post them in the chat. Also feedback too. If you have thoughts or things you want to share with the presenters or with the rest of the group, you can post there as well. So if you have any questions for me or CVTC, post there.

What are you still wondering about when it comes to automation and new technologies? Have you seen changes happening in the industries that your program trains for? And what has your team done to respond, or have you -- do you have anything to add to some of the strategies and things we talked about today?

So while you're thinking about that and posting some questions or feedback, our first question comes from William for the CVTC team. And he asks, "Given this low unemployment, are you having trouble finding qualified instructors in new and emerging technology, emerging tech sectors?"

MR. SULLIVAN: Yeah. This is Jeff again. We are finding it challenging. We've not gone unfilled for our positions here, but we really have low pool -- pools of candidates for instructors. One pathway we found even for our instructors, if they would start out maybe teaching nighttime courses for us in an adjunct role and they become comfortable in teaching and then make the career decision to become an instructor when those positions are open.

The other thing too is keeping current. The current skillset for instructors has been a challenge just simply staying on top of the technology and budgeting that time over the summer or winter break and being up to par on the learning technology, then also the robots and the PLCs and sensors that they have to be interacting with to teach our students.

MR. POLAND: Great. Thanks. One thing I remember talking to you guys about is how you've sort of tried to integrate thinking about future of work technologies into the bi-annual meetings that you have, Julie. And you at one point invited a speaker to come talk about blockchaining to a bi-annual meeting that you have with your subrecipient partners in the TechHire grant.

Could you share a little bit either just about that presentation or what your takeaways or what was interesting about that or just in general how you sort of approach that with your partners?

MS. SHERMAN: Yeah. I think we like to kind of look at what the latest and greatest is out there, and so we build off of our bi-annual meetings. So we have had a cybersecurity briefing once and kind of the internet of things and Industry 4.0 and how that affects the way manufacturing is now. And out of that came blockchain, and no one in our consortium really had any idea what blockchain was. So we were able to find -- Doug actually had a friend who was an expert in blockchain, and he came and presented for us.

We find it really valuable or I find it valuable for our team to kind of just be open to new ideas, that we don't keep our bi-annual meetings just centered around only what we're doing within the grant, that it's important to look at different things that are out there that could possibly affect the way that we teach, what our curriculum looks like, and stuff like that. I don't know, Doug. Did you want to add anything?

MR. OLSON: Well, what I found interesting with the blockchain presentation is, for those who do know a little about it, they think of it more from a cryptocurrency standpoint with Bitcoin being probably the first chain blockchain technology was used. But if not there, then maybe in the financial sector.

What was interesting is one of the other speakers we had that day is a maintenance director for Walmart's distribution centers, and he was here speaking about latest technology in supply chain management. And the part that I found interesting was after both of their presentations, I found the two of them in the corner talking about how blockchain is starting to be integrated into machine technology from a cybersecurity standpoint.

The Walmart representative mentioned to me that they don't go through a day without cyberattacks on their technology, hackers trying to get into the equipment to either steal technological ideas or to pack in and disrupt the supply chain process for them for an economic advantage. And so the blockchain technology is an area they're investigating as a more secure way to do that. So I thought it was interesting how one industry expert started talking to another and where they come together.

MR. POLAND: Yeah. That's great, and I know that there -- I just want to reinforce a point that you made that blockchain is a technol- -- it's most known -- well-known application is Bitcoin and for cryptocurrency, but there's a lot that's happening with it in security. There's folks that are looking at it in terms of digital badging or credentialing because of its security and because of its sort of public nature, that the idea behind blockchain is that it's a digital ledger that is co-owned by everyone who interacts with it. There's not an intermediary that owns it and owns the data or owns the system. It's owned by everyone who transacts on the system.

And so there's folks that are thinking about it in terms of awarding credentials or certificates on blockchains or awarding digital badges that way too. So there's lots of interesting experiments with it, and it's really cool how you guys came about it in the cybersecurity space.

So I have a question that I'll first ask to the audience for you guys to respond in the chat and then have you guys at CVTC respond verbally, if you could. But what are you most concerned about with regard to shifts in your specific market or the specific area that you're training for, not just in the next year but what might be happening two or three years down the road? Are folks in the audience seeing some of the changes by automation, new technologies in the workplace, and what concerns you? How are you keeping up with it?

And then, CVTC, if you guys -- you presented some of that already, but is there anything that still is sort of concerning to you or something you're not quite sure how to handle yet but you're thinking about or --

MR. SULLIVAN: Well, this is Jeff again. The one example I can bring up is our college added a nanotechnology program about 10 or 15 years ago, and we were paying attention to trends and trying to stay on top of things. But the careers didn't really pan out the way we were looking for.

So I think the -- my concern is just making sure that we're providing the education that's most relevant for the careers that are going to exist for our graduates when they complete the program two years from now.

So staying on top of the technology and making sure that our students are prepare to interact with that technology is important, but I also think it's important to make sure that we're projecting and staying in touch with our employers to make sure we're training the employees that they're looking for and how those careers are going to be developed.

And if there's something we have to be ahead of, we like to be ahead of. We also have our business and industry solutions team. If we need to upskill folks that are currently working, we have ability to do that as well.

MR. OLSON: Okay. Yeah. This is Doug, and what Jeff is saying in another -- saying it another way is we've had the ability, the flexibility to remain very nimble in our approach to education. So we've had the opportunity to shift that focus as the industry needs us to, and that's part of the trust piece that we've developed with the industry. They know we'll do that.

So that's what the value of those advisory committee meetings are is, as Jeff said, we have to plan two or three years out to train the students to do the jobs they're looking for. So they need to let us know and communicate to us what they're thinking about and where the changes are as they see them so that we can remain able to provide relevant employment staff for them.

MR. POLAND: Okay. Thanks, Jeff and Doug. And I think that's a really important point that you made, Jeff, is how do you pay attention to these changes and try to keep up but at the same time not create programming that's not going to lead to a job? Or if the trend's too far out and it's not clear that there's going to be jobs when they finish, is it worth investing in or not? Or when do you take those risks or how do you calculate that risk as a program I think is certainly a very important consideration?

So from the CVTC team, what advice would you have for folks to try to be more proactive instead of reactive when it comes to dealing with trends and the economy and changes in employment that might come about due to future work based on what you've learned and what you guys are doing?

MR. SULLIVAN: This is Jeff. I guess I'll provide my perspective, and then from Julie and Doug's perspective, they'll have some addition. But the one part that I found important is our faculty going to observe the technology themselves. So going on the shop floor, attending these national type trade shows, being part of a discussion with the employers in the region of where technology is going. They're ultimately the experts in the field for us that are going to provide the education for our students.

So them being able to boil down and find the key essentials that are necessary to teach our students, having the faculty there step one I think is quite important. And then those connections, when we started them, led to new connections. That led to Ashley Furniture flying one of our instructors to Germany to look at some of the technology that they were considering to incorporate because of a pain point in their manufacturing process.

So starting out and really having the instructors involved in that discussion was something that I found to be helpful, and then they also know what's possible to teach right now and then what's going to take some time and training to teach in the future.

MR. OLSON: This is Doug, and what that also helps us do when the faculty are involved with that -- with the employers in that way, as they see what technologies need to be taught, they also then know what type of equipment we're going to need here to be able to teach that. And when you're teaching a dozen or two dozen students at a time how to do something, you can't just buy one piece of equipment. So it has to be the right equipment, but we also have to plan for that capital investment for the future also so that we can get that fit into the mix to provide the training on a timely basis.

MS. SHERMAN: Yeah. And this is Julie. My perspective is a little different. I would say I completely agree with what Jeff and Doug have said, but then I think looking at grant opportunities for the future so that you can kind of implement these things to see if they work is what you really have to do as well. We've written some NSF grants which have given us some funding to buy new and innovative equipment, change our curriculum, and that's just really helpful for the college.

MR. POLAND: That's great. Thank you so much, guys. So I'm going to go ahead and start to wrap us up here. Really appreciate Julie, Jeff, and Doug joining us from CVTC. Really cool stuff you guys are doing on the ground to think about the future of work and automation and trying to figure out how to steer your own DeLorean there and sometimes making mistakes and having to learn where to take the risks and where you can't take the risks in changing or creating new programming and learning from it I think a really great example of how other programs could be approaching this.

So just a few things before we wrap up. First of all, well, I'd strongly encourage everybody to come to our closing plenary tomorrow the same time. It will be tomorrow at 10:00 a.m. Pacific Time, 1:00 p.m. Eastern. And I know I've been to a lot of conferences, just like you have. It's easy to skip out on the last session, but here's really why you don't want to skip out on this session.

There's going to be some really great material in terms of sustainability planning. We're going to hear from folks that have done sustainability planning from the Ready to Work grant from Department of Labor and also the TAACCCT grantees who have learned quite a bit. There's a whole TAACCCT sustainability toolkit, and that as programs are kind of wrapping up and thinking about sustainability and I know CVTC is doing that with their partners, this will be a really great session and get some takeaways and some tips that you guys could be using for sustainability. So please don't miss it, 10:00 o'clock Pacific, 1:00 o'clock Eastern tomorrow.

Also want to encourage everybody to continue the conversation on Slack. So the slide you have in front of you, you probably have received the invite a few times now, but as you're thinking about what we presented today, what new technology or concept in the future work is most interesting to you? Or do you have any interesting article or report or something you've read or something you're trying to process or think about? Post it on Slack so the rest of the TechHire community can chime in and respond and carry on the conversation.

So with that I'm going to wrap up and let you all go. Again, if you have any questions about your grant, here is the TechHire grantee mailbox. And thank you, everybody, for joining us. Really appreciate your time, and you can download the slides. We also have some references at the end of the slides for the part that I presented on.

But thank you very much, and have a good rest of your day.

(END)