ICT Educator Webinar Series

Alternative Pathways to Tech:
Co-Creating Innovative Workforce Training Programs in AI
and Beyond

A Case Study with SEMI and Skyline College

April 30, 2021

Contents

(00:00:00) Welcome

STEVE WRIGHT: Good morning, everybody. Welcome to the ICT Educator Webinar Series. I'm Steve Wright, the statewide director of the ICT sector team, which is part of the Workforce and Economic Development Department of the California community college system, and these webinars are brought to you by our entire sector team and produced by Nicole Sherman. Our guest speakers all volunteer their time for the sake of our students' success.

Our website currently has over 60 recorded webinars for faculty that feature carefully selected experts, successful how-to techniques, and each webinar is video recorded, edited, chapterized and transcribed, along with the PowerPoint presentations and relevant links for later use. Today's webinar is being recorded and should be posted in less than a week.

- *MAY 7 – Facebook: Student Certifications and Digital Badges*

Next week, to close out our spring programming, so to speak, we have Facebook, who will be talking about their certifications and digital badges. A number of our colleges in the Bay Region have been utilizing these to teach valuable skills and marketing and digital metrics analysis that Facebook provides.

(00:01:13) Today's Webinar

WEBINAR PRESENTERS

Alternative Pathways to Tech: Co-Creating Innovative Workforce Training Programs in AI and Beyond

SHARI LISS
Executive Director, SEMI Foundation

Shari is responsible for driving the SEMI Strategic initiatives for Workforce Development. Specifically, she provides leadership to the SEMI Foundation from programs to attract and fill the global electronics industry talent pipeline to fund raising and sustainability. Shari is also responsible for leading SEMI's Diversity and Inclusion initiatives.

ANDREA VIZENOR
Dean of Strategic Partnerships & Workforce Development, Skyline College

Andrea acts as a catalyst for the advancement of career education programs, thoughtful industry engagement, K12 pathway expansion and educator professional development. In her role as Dean of Strategic Partnerships and Workforce Development, Andrea works closely with faculty, staff and administration in paving the way for new program development, quality high school partnerships and collaborations, adult school bridge to college programming, high value employer partnership creation as well as the creation of valuable work-based learning opportunities.

STEVE WRIGHT: Today, well, everybody talks about employer engagement, but some people just do it. I think it starts with talking, but it certainly doesn't end there. When I heard what Skyline College and SEMI were able to initiate based on their conversations, I knew we had to share it with our ICT Educator Series audience.

Now, here's employer engagement, career pathways, and innovation all in one. From Skyline College, we have Andrea Vizenor, and from SEMI is Shari Liss, who will share more about their roles in the path they developed, and how it's a model for other pathway development processes. But first, I'd like Shari to go ahead and tell us a little bit about SEMI, so we can understand how working with an industry association can be beneficial.

SHARI LISS: Great, thank you so much. Thanks for the intro and thanks for having us.

(00:02:10) About SEMI

SHARI LISS: My name is Shari Liss, and I'm the Executive Director for the SEMI Foundation. I wanted to thank you for giving me the opportunity to speak and share our work with you today. And Andrea Vizenor and I have decided to join forces and work together to co-create these innovative workforce training programs for students in partnership.

And we thought that today I would start by introducing kind of SEMI is, what the SEMI Foundation's work currently is, and then sharing how and why we met, and then Andrea will pick up on the work she's doing in partnership with us at Skyline College.

The vision for this work started by bringing together industry, education, and Workforce Development partners to discuss the critical skill areas and skill gaps that are seen as needs from within the semiconductor industry and also from SEMI's member companies. The first meeting was to discuss the microelectronics needs around skills and hiring with respect to AI and machine learning.

But before I dig into all of that, I want to kick things off by taking a few minutes to discuss the work of SEMI and the SEMI Foundation and a very high-level view of our work so that you can get a sense of who we are and what we do. So, we'll start there.

(00:03:21) Who is SEMI?

SHARI LISS: So, who is SEMI? If you're not familiar with SEMI as an organization, SEMI is a trade association, and we have over 2400 corporate company members, and that is globally. SEMI supports the full microelectronics and semiconductor industry. It's a powerful association that spans 7 global regions, and SEMI oversees standards for the industry. We run the SEMICON shows that you may have heard of—we have a big show coming up in December, SEMICON West in San Francisco. We're hoping to have that face to face. We support global advocacy for the industry and many other things, of course. But as you can probably imagine, the biggest concern that people see facing the industry is Workforce Development and talent pipeline.

(00:04:08) Workforce

SHARI LISS: So, with that in mind, it's not just workforce. I should say it's workforce but also looking at a diverse and innovative workforce. So, the tech industry struggles and competes all the time for talent, but there are currently tens of thousands of open jobs in the semiconductor industry in the United States at this very moment.

We also know that the industry is projected to continue to grow and thrive and innovate in the coming years. In fact, people are saying it's going to double in the next five years, which is pretty powerful. We also know that our industry workforce doesn't reflect the current diversity of the population of the United States, and this is a huge opportunity as there are many studies that point to an increase in innovation, creativity, problem solving, retention, productivity, and even revenue if teams are more

diverse. We know that the pipeline must get larger and more inclusive to meet all of the industry needs, which is one of the reasons we're starting to partner with community colleges more and more.

How do we as an industry compete with the Googles, the Facebooks, the Amazons, the LinkedIns of the world? When folks walk past the Google offices, they know what Google is, but that's not always true for the largest multibillion-dollar companies in the SEMI sphere. So, although chips are pretty much in every facet of our world, not everyone knows that much about the industry.

And when I speak to students across the globe, they know the applications. They know the end products but not always how things work or how they're built, and our chips go into every phone, tablet, computer, car, appliance. You know, we are everywhere. Our industry touches all aspects of life, so we need to tell that story. We need to spark interest in students, and we're an incredible field to enter, with powerful job opportunities and career paths. So, to that end, SEMI as an organization launched the foundation to focus on this work.

(00:05:55) SEMI Foundation

SHARI LISS: So, the SEMI Foundation is where I am. I am the current Executive Director of the foundation, and assist with developing this Workforce Development and diversity, equity, and inclusion programming on a global scale. As an industry with 2400 member companies that need these programs, this support, and ideas all around Workforce Development and DEI, we need to find a way to harness the collective energy of those doing great work in each of the individual companies and then spread the best and next practices across our industry.

We're creating programs. We're building awareness of the incredible opportunities in this industry, and my team is developing several initiatives in this space. What we've learned in my time with SEMI is that it's critical to work with partners, hence the partners on this call—thanks, Andrea, for being one of them. But before we get to that piece of the puzzle, I want to touch on a few of the initiatives that we currently have going on.

(00:06:48) Industry Image and Awareness

SHARI LISS: So, one of our largest initiatives is to address this enormous challenge that we face: attracting, developing, and retaining talent. We've launched a very large industry image and awareness campaign. This work is intense and meaningful and will, hopefully, reach millions of potential students.

We're building a documentary series about the industry. We're elevating stories of women, veterans, and people of color. We're building career pathway sites, looking at the skillsets, the interests, and the career opportunities of what's possible within our industry. We'll be doing extensive outreach and have already connected with over 250 colleges and universities through this work.

We're hoping, with this awareness and the pool from diverse communities and this storytelling, that we'll be able to light a fire and make a difference, to get people excited about this work and this field, about the career opportunities and career paths available to each of you.

(00:07:37) Diversity, Equity, and Inclusion

SHARI LISS: From the diversity perspective, we also know that women and people of color are widely underrepresented in our industry. They face systemic barriers that start in grade school and continue through each individual's professional journey. This isn't only a significant problem from a social justice and equity standpoint, but it hurts our companies and our industry. It limits our innovation, productivity, competitiveness, and profitability.

We don't want or need these limits, so we're trying to reverse this trend. It's a priority and will need to be a systemic change throughout the entire workforce pipeline. So, we've launched several different diversity initiatives within the foundation. We're building a diversity roadmap and toolkit for our member companies that will come out this quarter. We're hosting several virtual events globally, including panel discussions and hard conversations about both gender and racial equity. We've already had five events so far in 2021.

We're seeking funding to build both gender and racial equity programs that will dig deep into communities hit hardest by COVID, that will help to upskill and reskill potential employees. This work, in particular, is super critical and very exciting to me.

(00:08:45) High Tech U

SHARI LISS: So, on another front, we have another program that's been running for many years, called High Tech U. I know some folks on this call might know about High Tech U already, but that program is taking high school, but now also we developed a level for college and also for university students as well as educators.

We take these students into member companies and onto their sites for three days to learn about the industry, to do hands-on engineering design projects, and our hope is to excite and engage students in the STEM fields in general, and then, hopefully, to steer them in the direction of the work that we do in our industry. This is very powerful work and has already reached thousands of students and educators.

(00:09:23) Veterans

SHARI LISS: We also launched veterans initiatives, looking at how we engage soldiers on careers available to them as they transition from the service back into civilian life. We hold industry introduction sessions, job fairs, internship opportunities within our member companies, and match service careers with careers in our industry. Veterans are another powerfully diverse and strong population that needs support to find the right step along their career path.

(00:09:48) Mentoring

SHARI LISS: We also provide mentoring programs for college and university students to connect them directly with industry professionals. We have speed mentoring events and opportunities to work with companies to provide support not only to university and college students but also within their own doors. This is a powerful tool and a wonderful way to learn, and having mentors and supporters is always really critical to career success, in my opinion. This is available to anybody interested in our field, and you can sign up on our site, the SEMI Foundation site.

(00:10:19) Events

SHARI LISS: We also hold events throughout the year and around the globe—events and panel discussions on diversity and Workforce Development initiatives. We hold Workforce Development pavilions at all SEMICON shows. The pavilions are open to all students to learn about the industry and about job opportunities.

As I mentioned earlier, we're going to be hosting a very large workforce pavilion and job fair at SEMICON West this year. SEMICON West is happening in December, hopefully in person, at Moscone Center. It'll be our first hopeful big return to in-person events in a long time. We're hoping it can be face to face.

We'll also be incorporating diversity and workforce topics into all of SEMI's events in the U.S. and in Korea, Taiwan, Europe, China, Japan, and southeast Asia. Each region is different. Each message has to shift to meet the local needs, but the need for more diversity and the Workforce Development needs are there across the board and are global in scope.

(00:11:14) SEMI Works

SHARI LISS: And the last piece I'll talk about is the SEMI Works program. We're currently working to launch the SEMI Works and SEMI Certs program and portal in 2021. It's a powerful tool supporting training and retaining talent. It'll align with the industry and awareness work that I mentioned earlier. It also aligns with the Advanced Manufacturing Competency Model. It aligns with jobs, employees, skills, and available trainings, courses, and content. The work that Andrea is developing at Skyline, actually, will be a big part of this work moving forward. She hasn't heard that yet, but she'll know now! Another thing for us to discuss!

For companies, we'll be offering job boards, online job fairs, veteran connections, and learning management systems. For individuals, there will be a skill assessment, career pathways skill alignment to current trainings and jobs and opportunities to build industry credentials. For colleges and training programs, the portal offers a pathway to program alignment and SEMI certification. We're consulting with all of these groups regularly to enhance our initial versions of the portal, and we'll be making constant improvements as we go.

(00:12:16) Going Forward

SHARI LISS: So, I said a lot. That's a really quick look at our programs that we currently have going on. I know there will be time for questions later, but before I pass things over to Andrea, I just want to say you can see that we have a lot of programs in the works, but one of the areas that we're really trying to grow is our work with the community college system. Our High Tech U programs, our industry image and awareness campaigns, our SEMI Works portal, all directed towards student support, our mentorship as well, but we want to be doing more.

So, we reached out to partners and to Andrea and Skyline specifically to look at some next steps. As a first step, we asked our industry partners to assess our current needs with respect to skillsets, and we need to figure out how to engage multiple communities in our field to develop the appropriate trainings and resources to meet those needs of industry. We need to create partnerships to support those interested in joining our industry, and we need to strengthen our DEI and mentorship programs.

At the foundation, we're building and have launched several initiatives to support these needs, but now we're looking to partner with community colleges specifically to help develop pathways, trainings, and certificates in this space to make a difference. To work with our members and our member companies to create those pieces that are currently missing in the hiring puzzle.

So, that's a really quick look at all of our work. The reason Andrea and I came together to do this, it's a powerful need. We're just getting started, and Andrea is piloting with us in the AI and machine learning space, so I am going to stop sharing and hand things over to her. Thank you for your time.

STEVE WRIGHT: That's amazing.

ANDREA VIZENOR: I know. I feel like we should stop now!

(00:13:56) How Did Skyline College Do It?

Co-creation of Alternative Pathways to Tech - with a focus on AI

Co-creation
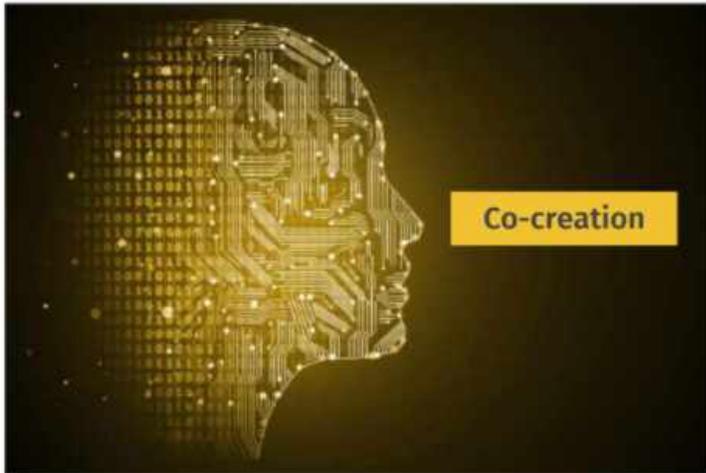
1. The collaborative development of programs and services together with experts and/or stakeholders.

2. Is a form of collaborative innovation: ideas are shared and improved together, rather than kept to oneself.

Skyline COLLEGE

STEVE WRIGHT: What does a college do with it, Andrea?

ANDREA VIZENOR: Yeah.

STEVE WRIGHT: You're there. You've made it happen. What happened? How did you do it?

ANDREA VIZENOR: Thank you, Steve, and thank you, Shari. I think it took about five minutes to listen to Shari to realize that if you're in a room with her, you're like, "Yes, I'm with her!" So, today we're just going to share a little bit. For those of you who don't know, I'm Andrea Vizenor. I'm the Dean of Strategic Partnerships in Workforce Development at Skyline College. I too will share a couple of slides to kind of set the tone for the project work that we've done, and then we'll be opening it up for questions.

What is Skyline's role in this partnership work? So, when we met with SEMI Foundation early on, we knew that there was a unique opportunity to really continue to engage, and we're so excited to hear that they were interested in this partnership with us.

So, as a Dean of Strategic Partnerships in Workforce Development, my role is to facilitate the engagement of stakeholders to do this type of work. So, immediately, we were like, "Hey, we're co-creating pathways and really wanting to do some alternative pathways to technology, specifically in AI." So, the idea here was bringing a diverse group of stakeholders together to share expertise, ideas, and really begin to assemble the components of Workforce Development training programs in some key technology areas.

We have these models sometimes within community colleges where a faculty member designs some things in their own space and then comes out and says, "Hey, industry! Take a look at what I did." So, this is kind of putting that approach on its back and saying, "Hey! Let's try something new and bring folks together early and often on how to do this work."

(00:15:43) Collaborative Team Membership
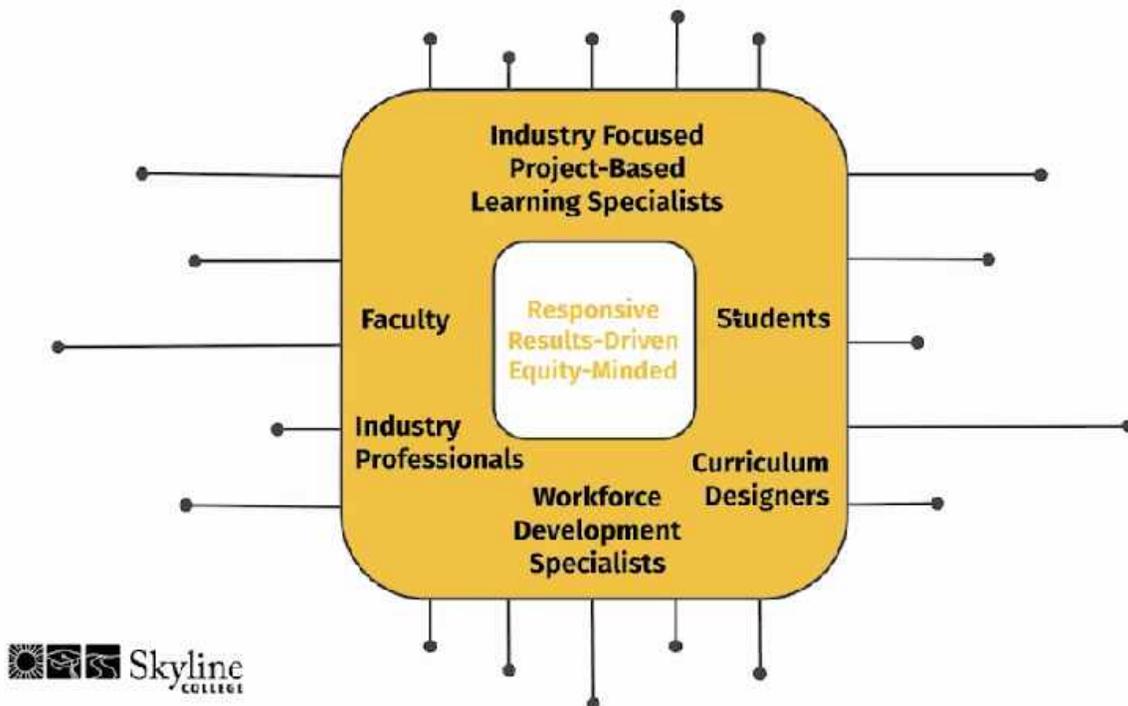
ANDREA VIZENOR: So, what that means is we developed a team in January, where we brought together faculty members, and we were very explicit in recruiting faculty to look like the students we wanted in the program. We recruited women, faculty members of color who were interested in this work to be the faculty leads and champions in this engagement.

We also hired student assistants to work on the project, so we did some outreach to make sure that we were having students engage in this process. We had a student who had transferred from the adult school into community college and is now getting ready to move on to the four-year institution. We have students in our dual enrollment program who are participating in our team, and we also have traditional women students who are moving through the institution, so really thinking about, holistically, what does it mean to design with all perspectives in mind?

We also had industry-focused project-based learning specialists involved. Many of you know of Quasar and the project-based learning suite of experiences they have, so they are heavily involved in our

work. In addition to that, we have Workforce Development experts from Stanford and, of course, SEMI Foundation, so there were curriculum folks as well as other support members within the team.

(00:17:08) Process of Engagement
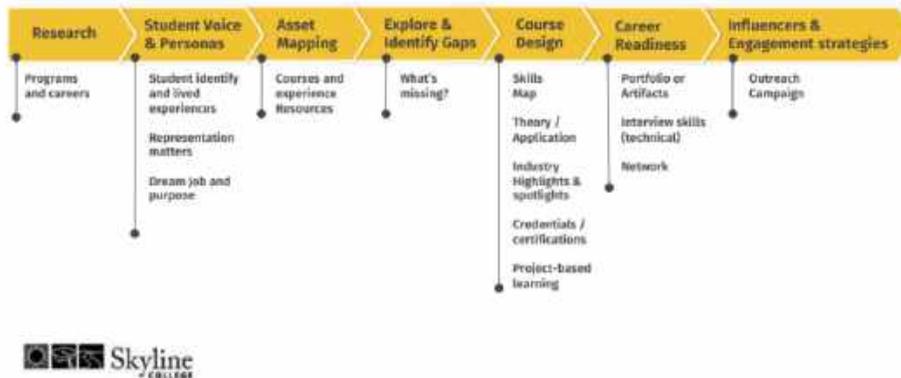
ANDREA VIZENOR: Every Monday since January, we've been meeting with a series of activities moving through what does it mean to create these programs, these pathways, in a variety of tech areas. So, here's just kind of the process of engagement to kind of bring that to life.

We started with researching programs across the state and the nation, particularly in AI, to see what was out there, what was happening, what were the things that were really innovative, and being responsive to what's happening currently.

We also built in these opportunities for student voice and personas because we knew, if we were designing programs, we wanted it to resonate with the students who may not typically see themselves going into tech to now see themselves as really interested and really being invited to join in these learning and development opportunities, and really focusing on this message I said earlier around representation matters, so making sure that our faculty and the folks that are teaching are really the folks that are going to be in the program as well.

Asset mapping—what courses do we have, what experiences do we have, what types of curricular resources exist, what project-based learning tools can be integrated, what industry-recognized certifications can be integrated? I didn't mention earlier, but NVIDIA, one of the tech companies in our area, also is a member of our team, so they regularly engage around some of their curricular resources—educator kits and student kits—so we'll talk a little bit more about the integration of those tools as well a bit later.

And then really looking at where are the gaps? We knew we had some existing courses we could pull from, what are the courses that we need to develop, and we really came up with this mapping of where we needed to go from there.

And course design—I said a little bit earlier that we spent a lot of time looking at job openings, what are the different types of skills. Shari mentioned an event that we did earlier. It was really great to hear from lead AI folks across SEMI, who were talking about, "Hey, these are the types of skills we're looking for," and really validated what we were doing in this space as well.
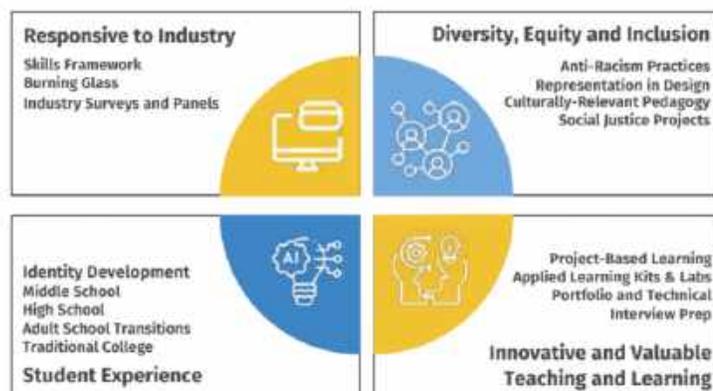
What does theory and application look like—we really wanted to focus on the applied learning concepts in those entry and middle-skill jobs, really making sure that we were integrating industry highlights and spotlights so that, again, students could see themselves in those roles, and really paying attention to what industry was looking for around credentials and certifications. And I realize many of the audience here is regional and state talent, so you guys get that more than most folks, but that's certainly important as we think about the local implementation.

And then having a lot of conversation around career readiness—what are the portfolios or the artefacts that employers are going to be looking for that will thoughtfully show that students can demonstrate the skills that they're looking for, and then, of course, the technical skills that are required in the interview.

And then really taking some intentional approaches around our outreach campaigns to students and individuals in our community to get them excited about joining these types of training programs. And that's why the partnership with SEMI was so important as well, is their commitment to DEI and just making sure that we are creating opportunities for disproportionately impacted students in our communities, especially as we think about this post-COVID response and really looking at continuing to address the job loss.

(00:20:43) Design Elements

Design Elements

Responsive to Industry
Skills Framework
Burning Glass
Industry Surveys and Panels

Diversity, Equity and Inclusion
Anti-Racism Practices
Representation in Design
Culturally-Relevant Pedagogy
Social Justice Projects

Identity Development
Middle School
High School
Adult School Transitions
Traditional College
Student Experience

Project-Based Learning
Applied Learning Kits & Labs
Portfolio and Technical
Interview Prep
**Innovative and Valuable
Teaching and Learning**

Skyline COLLEGE

ANDREA VIZENOR: In addition to that, there are several design elements that were integrated into this partnership, this team, this collaboration, really making sure that we're responsive to industry. I'll show you a little bit about our skills framework in a moment. Of course, Burning Glass and looking at what is available there around skills, abilities, things that employers are looking for. And then, of course, industry surveys and panel experiences, getting to know more information.

Paying a lot of attention to student experience. Identity development is really going to be key in the way that we're teaching these programs because we want, again, students to understand that their identity is an asset as they enter careers in technology, so really empowering students to use that as a key developmental area. And then really focusing on middle school, high school, adult school transitions, and of course, the traditional college students. So, taking into consideration the entry points of all of those areas.

Diversity, equity, and inclusion continues to be a priority at Skyline, certainly another area of synergy and excitement that SEMI is so dedicated in that area, and really making sure that we're integrating anti-racism practices in teaching and learning and employing culturally relevant pedagogy. Also, embedding some social justice projects, so we have some really cool things that we're doing in AI, in particular, around kind of zip codes and policing and things that are really relevant as we think about what's happening around race across the nation right now.

In addition to that, really making sure that we have, and are paying attention to, innovative and valuable teaching and learning tools and materials and experiences so that students can enter the workforce having used the types of materials and experiences that they would be using day one on the job. So, we'll talk a little bit about that, but really leveraging some of the student kits within NVIDIA and some of the other certifications that embed core activities that you might be doing on the job.

(00:22:50) Alternative Pathways to TECH!

Alternative Pathways to TECH!

6-9 Month For-Credit Training Programs

- Technology Sales
- Jr. Full-Stack Engineer
- Data Science Analyst
- Jr. Applied AI Specialist/ Solutions Architect
- Dev Ops
- Cloud Developer

Skyline

ANDREA VIZENOR: So, our Alternative Pathways to TECH! is going to focus on six major areas: Technology Sales, Junior Full-Stack Engineer, Data Science Analyst, Junior Applied AI Specialist/Solutions Architect, Dev Ops, and Cloud Developer.

I know that many of you are already down the train with cloud development, and Skyline wasn't ready, but we are ready now. But we are excited to say that since January, we have been able to get our new discipline codes, as well as we are finally… They're due Monday, but we are submitting seven courses specifically focusing on Full-Stack Engineer and Junior Applied AI Specialist Solutions. And then our first two curriculum meetings in fall will put the rest of the courses through.

So, now, I said we started this in January. We brought together all of these stakeholders, and we ultimately have all of our courses through within the first couple of months, which would be in August or September, on the curriculum committee. So, I know that probably sounds a little scary to some colleges if you're on the line, but it was really an emphasis at Skyline to make sure that we were thoughtfully engaging stakeholders in the design, in the priorities, in the way in which the program would evolve, but that there was a sense of urgency.

We know now, more than ever, disproportionally impacted students need to access to viable careers and to begin to start seeing themselves in Silicon Valley and all of the different types of companies, especially within SEMI Foundation, so that they can really begin to see the bright spots on the other side of COVID and beyond. So, that's just a quick snapshot.

The idea around packaging is that students will take two courses that are eight weeks in length at a time. So, it's about six to nine months, depending on which pathway we have, and we have the experiences planned out as well.

Skills Framework

Algorithms and Databases

	Description	Junior Full Stack Developer	Junior Applied AI Developer	Cloud Developer	DevOps Specialist
Coding basic	C programing, Control flow, subroutines, scalar, types and introduction to data structures (array and list)	x	x	x	x
Python basic	Basic Python programming, algorithm and data structures (array, list, dictionaries, set, tuples)	x	x	x	x
Advanced Python	Advanced algorithm and data structure (advanced lists, segment tree, trie, binary indexed tree, suffix array and tree self-balancing BSTs, K dimensional tree, disjoint Set, n-ary tree)		x		
SQL	RDBMS, RDSMS, SQL execute queries, retrieve data, insert... relational algebra and tuple relational calculus	x	x	x	
Other Database (redis...)	NoSQL database, JSON,	x	x	x	

Skyline COLLEGE

Skills Framework

Full-Stack Development

	Description	Junior Full Stack Developer	Junior Applied AI Developer	Cloud Developer	DevOps Specialist
HTML + CSS (Bootstrap)	Web language	x		x	
Javascript (ReactJS)	Node, NPM, web development	x		x	
Javascript advanced***				x	
Django Framework	Migration, Model View Controller, security	x		x	

Skyline COLLEGE

Skills Framework

Artificial Intelligence and the Cloud

	Description	Junior Full Stack Developer	Junior Applied AI Developer	Cloud Developer	DevOps Specialist
Keras, Jupyter	AI and Data Manipulation		x		
AI technologies			x		
Basic Cloud technologies	SAAS (web), Docker	x	x	x	x
Intermediate cloud technologies	PAAS, SAAS (all other than Web)		x	x	x
Advanced Cloud technologies	IAAS (server, network, firewall, Docker, Kube)				x

Skills Framework

Tools and Preparations

	Description	Junior Full Stack Developer	Junior Applied AI Developer	Cloud Developer	DevOps Specialist
GIT / CI CD	Engineer skill set to dev, test and get production source code	x	x	x	x
Peer reviewing	Learn how to give positive feedback on code and receive feedback	x	x	x	x
Technical interview	Question Writing Answer procedure and training	x	x	x	x

ANDREA VIZENOR: We very quickly did some skills framework looking at job postings, looking at Burning Glass, looking at industry input, and really began to look at what are some of the skills that are really being

requested of different types of roles. And then we went across all of the different certificate areas or program areas and started to look at the synergy.

Quickly, we learned that… You know, we were focusing on AI first, but we knew that there were going to be many opportunities for stackable credentials within that space. So, that's why we expanded to six areas instead of just focusing on a singular area, like AI, and also wanting to be much more inclusive and broad in the types of offerings that students would have access to. We did a lot of work just kind of identifying different areas of things that would be needed within preparing students for these types of jobs, so this is just a quick snapshot of that.

Here is our Monday Zooms from 4 to 5. Again, we have representation from SEMI Foundation, their curriculum folks as well as some of their leadership team members and our faculty and students. And it's really quite cool when you hear a faculty member talking about an idea and industry representatives saying, "Hey, have you thought about this?" and then a student saying, "Oh, by the way, this is what I think might be interesting from my perspective."

It's such a thoughtful exchange, and as leaders in career education and workforce, it's our work to facilitate so that voices are feeling heard and so that those really awesome ideas are rising to the top. And every week, I am just blown away with the high levels of engagement, the ideation that comes from it, and the deep commitment to this work to making it successful. And clearly, just within the timeline I mentioned, you can tell that there's just an insane amount of dedicated people to make sure that we're moving the project forward in an efficient way.

I see Steve raising his hand.

STEVE WRIGHT: You know, a couple things in our discussion previously that you may touch on at some time, but a new question… When I look at this, I ask myself, "You did all this during the COVID era." How much would you think that the ability of a Zoom call to bring in all these people at their convenience at the same time… Did that actually make it a better process?

ANDREA VIZENOR: Yeah, I do think Zoom made it much more accessible for folks. Especially as you think about industry, having to drive from Silicon Valley over to Skyline doesn't make it always accessible. So, yeah, I do think Zoom played a huge part in the efficiency of engagement.

Also, even when we're going through the development of course outlines, a faculty will say, "Hey, I have two questions about Full-Stack. Let's talk about this." And then I'm reaching out to the employee partners, and all of a sudden, we're on Zoom in less than a minute, as opposed to what it might look like if you're trying to send emails back and forth and visiting a site and that type of thing. So, I really appreciate you bringing that point forward, Steve, because I do think those are some of the upsides of the pandemic, for sure.

STEVE WRIGHT: You've done something remarkable here, and in record time. One of the other things you shared with me is how you broke down traditional barriers to getting things done. These are interdepartmental pathways, as I recall, and you had all the traditional bureaucratic reasons why not, and yet you managed to break through that. I think that's a story. You want to share a little bit about that?

ANDREA VIZENOR: Yeah, I think keeping it about students is critical, and keeping it about making sure that we are creating opportunities that don't currently exist for the students we are dedicated to serving. And as we think about the work at Skyline, we have been really deeply immersed in our work too, making sure that we are creating the same success rates for Latinx and black and African American students as we are for other demographics of students.

So, for us, it was really an equity-minded approach to the project and making sure that any time we would get a little bit of pushback from curriculum or a little bit of pushback from this person or that person, that we just brought it back to students. And I think the more that you can not waiver on that, the more that you can move things thoughtfully forward.

You know, there were moments, I'm not going to lie, where we're sitting with curriculum, and they're like, "Well, I think you need to wait until next semester to do this." So, I had to firmly and politely say, "We can't wait another moment. Students need access to this type of dynamic training and packaged in such a way that they see it starting and finishing and entering the workforce."

The more that we can create programming that's not semester to semester but really breaking some of those traditional barriers around the systems of education that have existed for so long, that's the aspiration that we want our community to start to feel from the community college, and also to just showcase to employers that we can do the dynamic that they need to build the pipeline that's so needed, in a timely fashion.

STEVE WRIGHT: Yeah, I believe—

ANDREA VIZENOR: Steve, I know you're jumping in to questions, but I love that we're going to move into the question phase, so thank you for that opportunity to share. And I do just want to give a shoutout to Shari and SEMI Foundation for the incredible work. We're talking now about faculty internships working together over the summer to learn even more interesting information about AI and how that can be integrated into curriculum.

She also mentioned the mentorship and the variety of other programming, and I always joke with her. I'm like, "Hey, you don't have to tell me every second something is coming our way because I'm on

board. We're already dialed in, so just keep it coming." So, thank you for the opportunity to be here today, and Shari for the partnership.

(00:30:40) Questions

STEVE WRIGHT: I think we'll open to questions now. A lot of good questions have come up. I always have a ton myself, but I'd like those of you who are at the different colleges, what do you think? Can you do this? Well, while they're warming up, one more. I think we've already touched on it, but I wanted to make sure I brought it out.

You used the priority of equity as a way to dissolve bureaucratic stalemates, I think that was very important because these bureaucratic stalemates are hard to beat, but you used the current situation and the priorities we have as a nation to improve things for all people. It almost reminds me of the zeal of the sixties because that's the kind of thing that can sometimes break down those barriers, and I thought you used it very well because these things are hard to do in that timeframe.

ANDREA VIZENOR: Yeah, and one thing I'd like to just acknowledge too is that there's still this idea of 'academy' within community colleges, right? So, when you talk education or workforce-specific development for students, sometimes that's a scary space because most folks don't really understand it, right?

So, the more that you can showcase the types of jobs that are in demand, the types of skills that employers are looking for, the salaries that these jobs are paying, and the ways by which you can integrate industry-recognized certifications, project-based learning, and really applied learning opportunities that will move students through the development necessary to access those jobs, that's also just a great way to kind of move it forward. Just reminding folks it's going to feel different than the transfer com science path. I see some hands raised.

STEVE WRIGHT: Question here from Alan Foote—did you have any problems with the curriculum committee and project-based courses?

ANDREA VIZENOR: Yeah, so I think that always comes up because, again, it's nontraditional, right? So, really making sure that the content is explicit in what you're going to be teaching the students, and then the measures that you use around "What do the assignments look like?" showcasing that through project-based learning and really walking through what the end result of the project will look like.

So, students will work on this to create the end result, right? So, being very explicit in the way that it's written and not just saying 'project-based learning' because that can be interpreted as a lot of different things. So, I think the more that you're explicit but also really speaking to the content in the content area of the outline is going to be critical.

STEVE WRIGHT: OK, we have some folks with their hands raised.

TOM: Andrea, thank you very much. I am very impressed with what you've accomplished in such a short time, having worn my Teflon suit to a curriculum committee many a time, so you're my hero. Really appreciate that.

I was going to ask you, did you come up with some courses in terms of delivery? Are you going with a hybrid model? Are you going with strictly online? Or are you doing something like a flex-brid? Could you discuss that?

Also, could you briefly touch on accessibility? One of the limiting things that we have at our locale is everything has to be accessible, so I just wanted you to touch based on that. Was that part of the design pattern? And I really appreciate it. So, thank you.

ANDREA VIZENOR: Thank you, Tom. There are some gray hairs that aren't showing on Zoom, so that's from curriculum. I say there's a couple extra every time I visit them on a meeting! So, that's kind of a norm. It's a feeling that we have within our system, and at Skyline, we're even trying to kind of think differently about that, so I'll just say one quick thing.

We have instituted a curriculum committee consultation group, so any time you're going to bring a new project forward to curriculum, they meet with the curriculum consultation group ahead of time to give them some really deep understanding of what the project looks like, here's what you should be expecting, here's the types of things that will be integrated into the learning and development for students. So, sometimes that can be a great way to have a primer built in so that when you get into those meetings when they're looking at the courses, it doesn't feel as scary and sometimes crazy as it can.

So, I would say, around accessibility, absolutely. Everything that we're looking at, as far as integration of different teaching tools, whether it be project-based learning or other types of certifications, different types of learning institute materials, especially within NVIDIA, they are all accessible, so that's something that's also part of the vetting process.

We're also doing something really cool with the AI education project, which is a nationally recognized group across the United States, who is doing some cool curriculum and curricular resource development around AI that's not technology focused but really introducing it and making it accessible, and that will be actually integrated into some of our English learner programs in our high schools to get, again, nontraditional students excited about tech.

And then I would say that… There's one more thing you asked, Tom, and I was almost there, and I just forgot it. So, what was the third thing? Sorry.

TOM: The delivery modes?

ANDREA VIZENOR: Oh, thank you, yes. So, we are going to be doing primarily online for the first rollout, and then we are going to be exploring hybrid after that. But as far as going through the curriculum committee, we put them through for all three modes—face to face, hybrid, and online—and we are really excited because we are hoping to create a dynamic lab to support the face-to-face or hybrid experiences in the future, so it becomes this kind of training hub in technology that students move through and begin to see themselves in those workforce environments. Thank you for the questions, Tom.

STEVE WRIGHT: OK then, Jonathan.

JONATHAN: Hi. First, I want to just echo Tom's sentiments. This is really exciting to see. So, I teach in computer science at City College of San Francisco, and I have a couple of questions. First, I'm curious if you have any advice around building those industry partnerships, specifically taking those first steps with companies to try to establish a partnership. And second, I'm curious what you're doing around retention, just because I know that the last few semesters in the computer science department across all of our classes, retention has been a huge issue.

ANDREA VIZENOR: Thank you, Jonathan, and I certainly want to open up for Shari around employer partnership development. So, I don't know if you want me to start, and then you can add on, Shari. I want to create a space for you to be part of the Q&A.

SHARI LISS: It's cool. I mean, I know what you've created is incredible, and I know these folks are in your zone. You can start. I'm happy to jump in as well. Go ahead.

ANDREA VIZENOR: OK, thank you. I think it's so funny because we've been talking about industry engagement for a thousand years within community colleges, right? So, one of the things that I think is so important when it comes to industry engagement is authentic relationships that are consistent, that are focused on equity. For us, it was about who is interested in aligning with our mission, vision, and values of the college—and really are, not just at face value but are interested in rolling their sleeves up.

The other piece is who can stomach our environment, you know? Because we all know it can be a lot to handle. We did find out early on that the more I was just reassuring folks "We're going to move this forward…" You know what I mean? "We are committed. Here's our timeline. Here's the resources." And the more that you can show up and just have everything so nicely organized that folks see that progression very quickly, not meet to just meet, that's when you're going to have those higher levels of engagement.

We also did institute a leadership council at Skyline, so we do pull in employers who are part of a larger group in from time to time, to look at curriculum and different types of things that we're moving forward as well. So, I think it's about establishing the employer engagement in a few different ways across the campus, but it's regular communication, being thoughtfully engaged when you're there, understanding their language and education language and really marrying them together, and then really showing results. Constantly showcasing "Hey, we met last week. There are the three things we did this week." Really being able to showcase that.

And then around retention, I would just say we've done that through dual enrollment, and we are one of six colleges in the state who is maintaining headcount during the time of the COVID pandemic, and we have predominantly done that through dual enrollment. So, I think, Jonathan, the more that City College can look at com science and the technology pathways, how you can reach back into your high schools and build those seamless connections into your programs, that's where you're going to have the guaranteed student enrollment that's going to help offset some of those other issues that you might have, where there might be low enrollment at the college. And we've seen some great outcomes in biotechnology and other areas as a result of our dual enrollment work.

SHARI LISS: I guess I'd like to add… I mean, Andrea is so right on. I mean, ditto about the industry engagement. It's really making a difference, the way that she's engaging with employers and how they see the community college space really looking at building certificates and what that process could look like is pretty powerful.

I will also say that from the SEMI Foundation's view, I have a Workforce Development council that's made up of about 65 local members, local companies here in the Bay Area. We meet fairly regularly, and what's been exciting is that there's a real… People are identifying the need to explore alternative pathways to hiring.

People are starting to recognize that as the chip industry grows, as the semiconductor industry is expanding, as we're bringing manufacturing back to the United States in a very big way… I mean, if you've

been watching the news and the executive orders from Biden and the Chips Act, all the pieces that are sort of filtering into place, we're going to have to look at these other opportunities in terms of certifying and bringing in folks to the industry.

So, employer engagement, it's kind of like the right time. People are starting to admit that it needs to happen more and more. People are starting to say that education and industry need to partner more and more. I've always been in this kind of work, and I've always heard it from the education side, but this is the first time I can honestly and transparently say that it is being seen as a need on the industry side. So, if there's an interest, this working group that I have going on within the SEMI companies is a really great opportunity to start that conversation at least, if you're looking for specific industry partners.

And to echo something else that Andrea mentioned earlier, the Burning Glass data around the job needs is really integral in terms of how we look at what else we could be focusing on in terms of certification areas and need within the industry. So, if we look at building the right industry partners, pulling people in that are authentically excited about doing this kind of work and partnering with the colleges that have the ability to do the kind of work that Andrea is showcasing for us, and then be able to say it's successful, to have this to point to will help, I think, launch further initiatives and further partnerships. So, it's an exciting time to get in there. So, reach out! I can try to help.

STEVE WRIGHT: Employers are willing. That's good! That's always good. Does that answer your question, Jonathan?

JONATHAN: Yes, thank you.

STEVE WRIGHT: David Hall, you're from Santa Monica City College, correct?

DAVID: Yes, correct. Thank you for having me. I'm always part of these webinars and platforms. I'm not always in front of the camera, but I am now, and I enjoy it. Thank you, Shari and Andrea. You guys are doing some awesome work.

My title at Santa Monica College is Career Education Specialist, and essentially my role is to engage in employer development, try to bridge the gap between the pathways and employers. My background is over 20 years of Workforce Development with the workforce centers. And some of the things I've done directly as a case management and business development professionals, we created work-based learning opportunities for the students that finish certain trainings.

And one thing that I did notice that was very successful was customized training programs, where employers would commit to the colleges and to the training program and say, "Hey, if we can get this cohort of people through these training programs, we will guarantee, let's say, 10 or 15 jobs on the job and train them for another 6 to 8 weeks."

That way, everyone was able to get their placement and retention numbers. Employers will be able to mold and train to their specifications, and then the schools will be able to get their training and placement numbers.

I always thought that was a really good idea. If we can find ways to implement education, employer engagement, and then the training institutions around to kind of create that commitment, where everyone can actually really feel it, because employers… I mean, for one, students can go through the career pathways and walk away with certifications, but then the hard part is, for us, to try to help them get that

placement. They have to have the soft skills, resume, all those good things in place, but I thought it would be so nice if we could implement ways to, let's say, use federal funds like the Workforce Innovation Opportunities Act... They will use that money to offset training costs to employers, so you can use that type of money, where employers can get money to offset their training costs. The schools can get their placement and retention numbers, and the student would be able to get an instant job. And if it's not a permanent job, at least they can at least from six to nine months on the job and then get some hands-on skills.

So, I love what you're doing, and I would love to be able to bring that type of a model to Santa Monica College because we have tons of pathways, especially in the information/communication/technology sectors, and I would like to see more of that, but just with more of a commitment to employer commitment. And I was wondering if you guys had ever thought about that as well? Sorry for being longwinded.

ANDREA VIZENOR: No, no! Thank you, David. That was a really interesting perspective to share. One of the things Skyline did about a year and a half ago was we disrupted our traditional career services, so it's not like this center you go check out once in a while when you need something, but we organized it by meta majors. We have job placement coordinators, so we have a job placement coordinator and some student assistants who work specifically in science, health, and technology.

So, as we were looking at the career readiness piece, there is resume design/development. There's interview preparation. There's the technical skill prep for the face-to-face, and then also the portfolio and kind of artefact design built in. And then ultimately, we will do career engagement activities to actually do that seamless handoff to employers who are hiring.

Also, our employer partners who are part of our project have committed to really being there to interview first and give Skyline students the first kind of pass as a result of that, so I too agree with you. There's nothing worse than having a bunch of great training and then sending students off to just kind of figure it out, so really thinking about the integrated programming that does the soft handoff to jobs is really important, so anything we can do to help support some work that you're interested in at your college, David, we'd be more than happy to do that.

STEVE WRIGHT: Well, you know, that really does bring up a question. You've done a wonderful job on the design and the implementation with more courses to be approved this fall, but I guess the rubber meets the road, and do the students get placed? And at some point in time, like any process, you're going to realize, "Well, this part worked, and this part didn't." How do you plan on doing your quality improvement down the road? Have you got that figured out? Of course...

ANDREA VIZENOR: Well, we've had some of the initial conversations, especially since we have students as part of the project and employers, so really building in, integrating in surveys and check-in experiences with students and both employers once they've hired our students, and then also our students once they're moving through the first set of cohort of courses so that we're constantly using that information to inform that continuous improvement in the moment, not a year and a half down the road. So, that's something.

The other piece is a regular engagement around just the constant evolution of technology and the skill change, right? Because we know that if we design something now, a year from now, it can really

significantly change, given the disruption and what continues to happen in the tech space. We are a project team, and we are committed to being a regularly engaged team to look at that stuff.

STEVE WRIGHT: You know, one of your pathways that just intrigued me from the beginning was the one that leads to technology sales. Coming from Verizon 23 years, where I supported technology sales teams as a marketing person, I know that's where the money is made. I mean, that's where you get the good jobs, and I'm so glad to see you tackling that. But interdepartmentally, what kind of skillsets did you see there? I mean, you're not talking about Python necessarily, right?

ANDREA VIZENOR: Thank you. That's a great question, Steve. We actually, as part of our Strong Workforce programming, developed a sales and marketing management suite of courses in the last kind of year and some change. So, when we first started this project team and we had our employers at the table, there was this young gentleman who is about 25, who is in tech. He's an AI guy doing incredible things in the space in Silicon Valley. He said, "You know what? I love AI. It's really cool, and we need to be doing that, but you also need to be doing tech sales." He said it's like the best-kept secret in tech.

And I was like, "What? I mean, we're not even there yet! We want to be in AI. What's going on?" So, at first, kind of that gut feeling, like we can't take on more, but the more we listened... We didn't take those biases that we had as educators, like we can't do more, we can't do this, we can't do that, because it's very easy to do that, especially in a time of pandemic. The more we heard what this employer was having to say and the more that we saw the synergy in some of the other program areas that we were offering at Skyline, it made perfect sense.

It also is a much more inclusive approach to tech, right? Because some folks might not be on the technical side of tech but really find themselves as having strong people skills, really engaging folks really thoughtfully, so that became something that rose to the top quite quickly and will be an interdisciplinary certificate of skills that will only actually have two technology courses in them, and they're both being kind of outlined now.

But really just this kind of broad understanding of what the emerging technologies look like, and then some of the strategies around solutions, because as you're selling them, you want to talk about what does the technology provide solutions for, because that's a major area of interest in that space. So, we're too excited about that because we just think it will be much more of a broad set of offerings for students to be experiencing at Skyline.

STEVE WRIGHT: And it's a great way to include their golf program in the curriculum pathway.

SHARI LISS: I was just going to add one really quick thing to that, the Burning Glass data. We just pulled another round this week, and there's over 25,000 jobs available in the industry in the United States as of today. The number one need is software engineering, which is really interesting because people don't think of the semiconductor industry. That's not usually the first thing that comes to mind. But the number two need was tech sales, and I thought that was really interesting. That was a little surprising to me—thousands of jobs available with incredible salaries and opportunities. So, I didn't even know that you were doing that piece. That's awesome.

STEVE WRIGHT: I think that's terrific. My experience with Verizon taught me that there are the engineers who understand the technology. There's the lead salesperson, and of course there are sales managers that are focused on one thing only, and that's quota. And then there's other people—marketing, support

people, and others, project managers, whatever—so tech has a whole ecosystem of jobs in enterprise company that all get paid very well, and you don't have to be super tech shark with Python and everything to get there, and I think that great jobs… I don't see anybody training for them. I think it's wonderful that you're taking that on.

SHARI LISS: And I think as part of our industry awareness campaign for the semiconductor industry, one of the goals was to show the breadth and depth of opportunity. So, the image, if a student has an image of what the semiconductor industry is, it's like the bunny suit in the lab, and we're trying to showcase the idea that there is this incredible assortment of opportunities, so yeah, that's a really important piece of this puzzle too, is opening up eyes and focus in terms of where there's room. You don't have to be super technical. There's a million other jobs out there in the field that will be well paid and will provide really strong career pathways. So, yeah, just to add that.

ANDREA VIZENOR: Shari, I'd just love to say one thing about the work that y'all are doing around the branding campaign. I mean, that's such a huge commitment from the sector and from your space and the foundation to support your members, because talk about thoughtful engagement with the stakeholders that you've been doing. I don't know if folks on the call today have taken part in some of their activities, but they're really taking the time to listen and hear and take in all of these perspectives as they do that work. So, I'm just constantly blown away, Shari, with your leadership around that but also just the commitment.

SHARI LISS: Thank you.

ANDREA VIZENOR: Making that kind of change.

SHARI LISS: Thank you so much. It is a big and powerful project for sure! It's going to be the next couple years of my life.

STEVE WRIGHT: Thank you both for showcasing what has been a wonderful relationship synergy and some of the innovative techniques you're both using in your respective organizations to try to make change and make things good. We appreciate, and we're so happy we were able to capture it here, and all of this has been recorded, will be edited up, transcribed, with the PowerPoint presentations, in less than a week, and we'll send out a note to everybody, so you can share it with your friends. Once again, thank you, Shari, thank you, Andrea, and everybody.

SHARI LISS: Thank you.

STEVE WRIGHT: Go ahead, Tom.

TOM: Andrea, by accident or on purpose, do you think you are using agile and responsive design in trying to get the curriculum committee to adopt that kind of model, moving forward?

ANDREA VIZENOR: Yes, absolutely, especially as we think about the implications of the pandemic on the way that we will be reimagining teaching and learning in the future. So, this is the time, technology folks! This is your moment to fundamentally shift curriculum and teaching and learning! Seize it!

TOM: That's what I think. I'm going to have that conversation with the chair and say, "Look, we really need to talk about an equity redesign of the curriculum process." OK, thank you so much. Keep up the great work. You've really inspired me here, so thank you.

STEVE WRIGHT: And one more question from Laura.

LAURA: Hey there. Sorry. I jumped in a little late, but I just wanted to say this was so inspiring. I'm at West LA College, and we have a similar kind of… Well, we have an industry partnership with the film industry, but one of the things we found was that some of our students… We've made assumptions about what they know. They know some pieces, some of the technical pieces they need to know, but then there's a lot of stuff that they just sort of don't know—ways of communicating this and that.

So, I'm just wondering, with your degrees and certificates, I was wondering if you had any… So, we ended up having this tech class, we call it, that's just like, "What's inside a computer? How do you this, that, and the other thing?" And I'm just wondering if, in some of your degrees and certificates, you've found that that might be something useful. Or have you found that that's even needed?

ANDREA VIZENOR: Actually, in our program design, we're doing some bootcamps leading into them. That was one thing I didn't mention. So, we do some norming at the beginning, and then also embedded tutors or supplemental instructors so that we're creating access. We're not doing that whole 7000 pre-req thing. We're meeting students where they're at, and we're going to assemble the programming in such a way that we'll create success for everyone who is interested.

So, I would just say sometimes it's about thinking about how you can norm in the beginning, integrate in, so that we're also building in mindset, so it's not just "Learn this theory and learn this applied area, but here are the mindsets that will be developed through the activities and the engagement." So, those are just kind of three things off the bat that I'm like, "Hey, it's about really packaging it in the teaching and learning environment."

LAURA: Awesome.

ANDREA VIZENOR: Yeah.

LAURA: Great work. Thank you.

STEVE WRIGHT: OK, I think we are at last call. Thank you, one more time.

ANDREA VIZENOR: It's Friday, Steve!

SHARI LISS: It's Friday. Thank you.

STEVE WRIGHT: Only three more Zoom calls to go! Take care. Bye-bye.

SHARI LISS: Thank you guys so much. Bye.

ANDREA VIZENOR: Bye.