[music]

Jill: Really working remotely, our students sit at the side of the pool with a tether and a robot that's several meters away at the bottom, completing the tasks. And certainly that can translate into them sitting in an office and piloting an underwater vehicle thousands of kilometers away. And so working remotely having this telepresence, I think our students may be working through some of the challenges of working at home and working remotely. They may be doing that much, much better than the rest of us, considering they've had practice

[music]

Mike: From the Center for Occupational Research and Development, welcome to Preparing Technicians for the Future of Work. I'm your host Mike Lesiecki. In each podcast we'll reach out to people who are actually on the frontline of the future of work and hear what they have to say. That means interviews with industry, interviews with working technicians, and forward thinkers in the field. We'll do some background research and we'll curate that research to make sure you have the most up-to-date and relevant information. And in every episode, we'll suggest action that you can take. We want to inspire you to take that action.

This podcast is brought to you by the Center for Occupational Research and Development, known as CORD, with financial support by a grant from the National Science Foundation's Advanced Technological Education program. Opinions expressed in the podcast do not necessarily represent those of the National Science Foundation. You can find out more about our project and our approach at preparing technicians—all one word—dot org.

Today our guest is Jill Zande. She's the Associate Director at the MATE Center in Monterey, California. Jill, welcome to the podcast.

Jill: Thank you, Mike. Thank you for having me.

Mike: You know you wear a number of hats at the Center and elsewhere. And you're the Associate Director. But what other things do you do at the Center and elsewhere?

Jill: That's a great question. Thank you, Mike. I am the Associate Director for the Marine Advanced Technology Education Center. I'm also the President and the Executive

Director of MATE Inspiration for Innovation, which is the 501(c)3 nonprofit that was inspired and created by the principals of the MATE Center. The MATE Center has been funded as an ATE Center for nearly 23 years. I've been with the center for 22 of those years.

And MATE uses underwater robotics and ocean and water themes to challenge students to learn and creatively apply STEM skills (science, technology, engineering, math skills) to solving real world problems. And we try to do that in such a way that also builds their critical thinking, collaboration, entrepreneurship, and innovation. And, as you mentioned, we're based in Monterey Peninsula College in Monterey, California.

There's one more hat that I wear more recently. I'm also a Co-PI with the National Center for Autonomous Technologies, which was funded as an ATE Center last July.

Mike: Interesting. That's great Jill. By the way, we're talking to each other from our home offices today, aren't we?

Jill: We are! And I'm sure we're not alone in experiencing some of the challenges working from home.

Mike: Right. You know, Jill, in our discussion today, I want to start with a particular question. How do you or how does really any educational-oriented organization engage employers? And importantly today, how do you keep them engaged for the long term? What do you think, Jill?

Jill: Mike, that is a really important question. It's an important question overall, but it's especially important in the light of COVID-19, when many of our programs and the activities that we use to engage employers have either been canceled, put on hold, or transitioned to online. So, I can share two examples, pathways really, that MATE has taken to engage and retain our employers over the long term.

So, we have a technical internship program where we place students "out to sea" on oceanographic research vessels. With that program, that was pretty straightforward. Oceanographic research vessels were and are still in need of marine technicians to support the work that they do. So again, the students go out. They gain experience. They build skills. They see if the job is a good fit for them.

And on the flip side, the employers can determine if the students are a good fit for them. And in many cases, it's

led to employment, which is really the ultimate return on investment.

Mike: Sure.

Jill: With the global MATE ROV Competition, it was the Marine Technology Society who came to us.

The Marine Technology Society is a professional society. It's really an umbrella society that represents marine professionals from government, academia, research, to industry. So, it was the Marine Technology Society's ROV Committee that came to us. They were looking for help. They wanted to develop a program that provided students with the skills that their industry needed, that their employers and the organizations that they represented needed. And perhaps equally as important, they wanted to raise awareness of the vast array of career opportunities available in the ocean enterprise.

So, MTS not only initiated and motivated the creation of the ROV competition, but they also supported its development. I mean that in terms of both finances, but also in opening the door to employers and working professionals. And they brought them along. They really helped to give us legitimacy and credibility. So, in that respect you could say they were definitely our "champion" and promoted us. And again, opened the door to so many employers and working professionals.

Mike: So, that's one of your key lessons right there. Identify a champion. In this case, interesting: a society representing a broad industry segment. There's other types of champions, too. But that seems to be real success factor for that industry engagement, doesn't it?

Jill: You know, it really was for us. And I really want to make that point not to underestimate the power and the partnership that a professional society can bring to you. In this case, again, it was the Marine Technology Society who approached us. And has really been a fantastic and a long-term relationship.

But, not only did they benefit our programs, but they also, as you can imagine, benefit our students. Professional societies like MTS often have scholarships available for students. And a lot of great career building skill workshops. And so, again, I would not underestimate the power of the partnership with the professional society.

And one other thing, Mike, you mentioned that beyond MTS, our champions, we have a number of them that have engaged with us and then promoted us to their organizations and other working professionals, their colleagues. And it's really been someone who has had direct contact with our programs. Maybe, for example, volunteer as a judge at one of our competition events, or perhaps their child or a relative participated. There was some engagement where they were able to really see and experience the benefits and the impact firsthand. And I think that really comes down to: we gave them something tangible they could grab on to. We gave them a defined tangible event, piece, program, and role that they could really grab on to.

Mike: So, in other words, that's how you're demonstrating that—you mentioned ROI (Return On Investment)—to these partners because, it seems to me, industry always wants to know, "Okay, what's my ROI here?" Do they also get access to the workforce? Maybe earlier access to the workforce? Is that a driver for them?

Jill: Absolutely, Mike. Absolutely. With the employers and the working professionals that are involved with our competition, they get access firsthand, in-person, right up front on the side of the pool deck watching these students in action. And they have an opportunity to interact, make contact, and certainly communicate directly to the students. So, that's huge.

And I want to mention another type of champion. Yes, the ROI, having a skilled individual that they can hire and help to meet their workforce needs and be successful and help their company to be successful. But we've also had champions from a place where you might not expect it. And that's the marketing and communications department. I can't tell you how many times I've been at an industry conference and had someone come up, look at our poster of sponsors, see their competitor's logo, for example, and ask where THEIR company's logo was. They wanted to raise the company's visibility in this case, right? It was about not being outdone by their competitors. But they really wanted to raise the visibility of their company. Get their company's name out there. Because they also recognized, in addition to keeping up with their competitors, that these students, someday there'll be in the workplace. Maybe they won't work for their company, but they'll be in the workplace. And they could be in a position where they are

responsible for purchasing, for making those types of decisions.

Mike: Sure. Sure.

Jill: And they appreciate that those students, if they remember that company and their products, they may end up being one of their customers.

Mike: Gotcha. So, I see what you're saying. Think about return on investment, the return to that industry engagement, but also part of that equation is giving them visibility. I like that idea, especially when they say, wait a minute, where's OUR logo when those other people's are up there? I like that, Jill.

Jill: And you know what Mike? I just want to add: more recently we've had employers join us and engage with us for a different type of ROI and that's "corporate responsibility." I think I've seen more and more businesses and corporations are realizing that, to attract and keep the best and brightest talent, they have to show that they care about things like the environment. Like social justice. Like giving back to the community. Like creating a welcoming and equitable work environment and a corporate culture that builds trust and encourages innovation and entrepreneurship. And so, it's a very different way of thinking, but I can tell you that corporate responsibility, that environmental, social and government piece, especially for larger corporations, is becoming more and more important.

Mike: I think that's right because our skilled technical workforce that is entering these industries, their awareness of those issues are right there! And I think companies do need to respond to it, as you say, Jill.

I have a follow-up question. We talked about this "workforce." Certainly you work at an institution that helps prepare those students for the workforce. How do you know what skills and abilities they need now and in the near future? How do you know that? How do you tailor the programs or your competitions to focus those skills, so when the students become first-time employees that the companies value them? How do you know what's coming or what they need today, Jill?

Jill: That is another great question, Mike. But before I answer that, I just want to make one more point about keeping and

engaging employers for the long term. Communication is also key, especially when it comes, again, to keeping them involved for the long term.

And especially now, in light of COVID-19, as I mentioned before. You know, a number of organizations have canceled programs and events, or put them on hold, or transition them online. And so, it's really important. I'm getting ready myself. We made the announcement back in March that we canceled the 2020 MATE ROV competition season. And it's time for me to reach back out to our sponsors, and our supporters, and the employers who are involved with us, and let them know, "Hey, we're still here. The teams are still innovating. And building. And working together." Actually a number of them have transitioned to making face shields for the medical community. And one team actually has a patent pending on a low cost ventilator system. So, I think that's something that our employers, even though it's not about an underwater robot at this point, it is about these teams and these students still creating and innovating. And I think it's important to let them know that, to have that touch point. That we're still here. And we'll be back stronger than ever next year.

So, now to your question. The MATE Competition, the MATE ROV Competition: it's global. It's been around for nearly 20 years!

Mike: Yes.

Jill: And it's really amazing to think that it has been that long. I believe it's safe to say, Mike, I'm going to go out on a limb here and say this: that the MATE ROV Competition is the only competition of its size and magnitude to have been founded by NSF ATE funding.

Mike: Yes.

Jill: The ATE program gave birth and established this global competition. And the competition is rooted in workforce development and workforce research. The MATE center, we've done a number of workforce studies and research into marine-related occupations. We did that in the early days and up until about six or so years ago. And that work resulted in MATE's knowledge and skill guidelines for various marine occupations. They really were the foundation for the competition.

But the question now becomes, and you said it earlier, "How do we stay relevant? And how do we continue to incorporate the skills needed by today's and tomorrow's workforce? How do we stay on top of things?" And for us, Mike, the answer has really been with our competition alumni.

Our former competitors: who are now out working in a variety of technical fields—from marine to aerospace to automotive. We are so fortunate that many of them stay engaged with the competition. They volunteer as judges. They mentor teams. They promote us to their employer and organization and other coworkers. And, perhaps most critically, they work with us to ensure that the competition stays relevant and focuses on the skills that are needed out there in the workplace.

And if you'll let me, I'll give you an example. This is my favorite example. We have three competition alumni who now work at General Motors. And, you know, they've judged at the World Championship event for several years now. So, a couple years back, about three, four years ago, we asked them, we said, "What are you seeing in your workplace? What are some skills? And what are the up-and-coming technologies? What should we focus on?" And they almost said in unison: autonomous technologies. Artificial intelligence. Because at GM they work on self-driving cars. They work on sensors. Rear backup cameras. And so, not only did they give us that idea, but they actually worked with us to develop tasks and scenarios that we could incorporate into the competition. Tasks that could be solved autonomously. And they worked with us to develop those. And they also worked with us on the rubrics to evaluate and score them. Because in the end we are a competition, right? Someone's going to get points for this!

So, it's been really incredible. Our competition, our robot will always have a tether. It's got a tether from the robot up to the surface to a control system. And the students sit and pilot it from the surface. But we can stay relevant by incorporating some things like, again, tasks that can be accomplished autonomously. We can build in some of these things to help keep us relevant. And our competition alumni are helping us to do that.

Mike: That's a great window into that world of industry, right? To USE the alumni. I think many programs across the country already do this to some extent, but could even do it more: reach out to their alumni to help them shape what the needs

for industry are NOW, to help them shape their programs. So, I just think that's a good idea.

Jill: Yeah, it's really been incredible. And I think when I talk about these three individuals at GM, and you know we have a number of other alumni who are out there, again, in various industries, it also highlights the transferability of the skill sets that we're developing.

Mike: Sure.

Jill: And many of our alumni go off into the marine workplace. They enter the ocean enterprise. But some go off into the different industries. And so, I think it just highlights that.

But yeah, back to the point, I think competition alumni— yes, many programs engage them, and I think it's important to keep that engagement. To keep tabs on them. To have them come back and work with you and give you feedback on the program. I mean, they're the ones out there living and breathing the current workforce. And they can be such assets to you and your program.

Mike: That's a great point. You know, I'm going to ask you to get out your crystal ball for a minute. You talked a bit about the need for some of these future technologies, particularly autonomous. You mentioned that. But if you had that crystal ball, you're looking into it, let's say two or three years out after the pandemic situation has resolved, what do you think the industry will be looking for in marine technicians in that future timeframe? What sort of skills, knowledge, and abilities will they be looking for?

Jill: You know we mentioned autonomous technologies, artificial intelligence, data management, of dealing with data. As you can imagine in the oceanographic research community, especially with some of these cabled observatories, they're collecting huge amounts of data. So, how to manage that, how to make sense of it is hugely important.

And again, autonomous technologies, artificial intelligence, which includes programming and computer science, cloud computing, all of those technical skills. They are and will continue to be important in the future.

I think equally, if not, perhaps more important are the soft skills. The employability skills. The 21st century workplace skills. Whatever label or name you choose to put on them. I mean if you look at reports that have come out

from the National Science Board and the National Academy, as well as some studies done by more, I would say "commercial" or "corporate" ventures, like LinkedIn and Forbes magazine, they talk increasingly about the soft skills and how important they are now and will be in the future. And I'm talking about things like creativity, critical thinking, leadership and communication, collaboration and teamwork. One of the studies in Forbes magazine listed "adaptability" and "embracing change." And Mike, aren't those two soft skills that we are all currently being challenged to develop? Right?

Mike: Absolutely.

Jill: And so, I think that will become even more critical as we move forward. And circling back to artificial intelligence... I was reading an article that listed some of the best non-tech skills to have, if you want to go into that field. You like to push the envelope and live naturally curious lives. And then you don't get overwhelmed.

And I think, you know, those attributes, again, the soft skills are—and will continue to be—increasingly more important.

I also think, Mike, global collaboration. Global partnerships. If nothing else, this pandemic has showed us how small the world really is and how we are all connected. Again, in that Forbes magazine study that listed the top 10 skill sets that they saw important in the workplace, they listed "diversity" and "cultural intelligence." So, the ability to appreciate and get along and work with a range of genders, ethnicities, religions, cultures. That is important now and will be more important for all of us, I think, in the future. And especially our students.

And that may very well be the number one outcome of the MATE World Championship. Mike, when we get together, we have students from 30 different countries. And to watch them working together, sharing—it is a competition, we know that, but so much more. There's collaboration. There's networking. There's friendships and relationships develop that continue on. And so I feel like, in that sense, we are helping to prepare them for the global workplace. And help them to have and develop that diversity and cultural intelligence.

Mike: Jill, I'll make sure in the Show Notes that we put a link to that article. And also a link that will help our listeners find out more about your Competition because, as you say, it's been going on for a long time and it's a big thing.

Jill: Yeah. Thank you, Mike. I'd appreciate that. That would be great. We'd love to get more people involved or at least seeing what we do. I'm just really proud of how that program's developed. And how we've gotten such support from employers, and working professionals, and our alumni, and certainly how big it's grown at this point. Pretty rewarding to see that. And humbling as well.

Mike: Cool. Today, Jill, it was just fascinating. We started talking about industry, how to keep them engaged. How to use communication. Demonstrate ROI. I think all of us can learn from those lessons.

And, in particular, about identifying a champion, whether it's a society or an industry member and working with them. I think those were good suggestions that we all can use.

I also liked how you use your alumni, right? That's really a great method of keeping connections with them and also helping them help you identify future workforce trends that they're seeing in their own industry.

And then, finally, we talked about these future skills, the big data skills, autonomous, but also those key workforce skills, the naturally curious type of people that industry is looking for.

I just really appreciate those comments, Jill,to help our listeners think about their own programs. Our industry listeners, thinking about how they interact with education. I appreciate your comments today, Jill.

Jill: Thank you Mike. With the Competition alumni, we do keep tabs on them. Long-term tracking and just keeping in touch can be really challenging. But we recently completed a second survey of our Competition alumni, where we reached out and asked about their degree programs, where they are now, if they're in the workplace. And specifically, how they feel the competition had an impact on their education and career choices. And we got some really wonderful and powerful results. So I'll put those up on the site that you'll share with the listeners that focuses on our Competition, and those results will be up there as well.

Mike: And Jill, I think that's really important because, after all, we do these activities, but what really has the importance is "What is the impact over time on the students that participate, who become your alumni?" So, good! We're looking forward to looking at those results as well, Jill.

Jill: Thank you, Mike.

Mike: I appreciate talking to you today, Jill. Best wishes for your future competitions in whatever format that they happen to be.

Jill: Thank you. Well, you know, Mike, our competitions are all about "telepresence" and really working remotely. Our students sit at the side of the pool with a tether, and a robot that's several meters away at the bottom, completing the tasks. And certainly that can translate into them sitting in an office and piloting an underwater vehicle thousands of kilometers away. And so, working remotely, having this telepresence, I think our students may be working through some of the challenges of working at home and working remotely. They may be doing that much, much better than the rest of us—considering they've had practice!

Mike: They're living it! I see that.

Jill: Yeah! Absolutely!

Mike: All right. Thank you, Jill. We'll talk to you again in the future.

Jill: Okay. Thank you, Mike. Take care. And I really appreciate the opportunity. You be well.

Mike: Goodbye.

Jill: Bye-bye.

[music]

Mike: Listeners. At the time of this interview industry and the world has been dealing with the challenges during COVID-19. Keeping industry engaged with education is particularly important today as we help prepare the future technician workforce.

In our podcasts today we heard from Jill how she interacts with professional societies and she finds champions inside those organizations. She works on high levels of communication with them. She demonstrates return on

investment and why they should be involved with her educational initiatives.

I want you to examine your own industry-education partnerships. Do you have a champion? Do you have good communication with your industry members? Do you interact with professional societies and your alumni? Those are good questions to pose for yourself.

Now as you look in the Show Notes today, I also want you to see some good references there. First, there's links to Jill's competition and her marketing information that shows how she deals with giving visibility to her industry partners.

And when it comes to future skills, she reminded us that a lot of it has to do with autonomous technology. Did you know that one of the newest ATE Centers is called the "National Center for Autonomous Technologies?" And we'll link that in the Show Notes. Take a look at their website.

And finally, in the Show Notes, you'll see an article called "The Most In-Demand Hard and Soft Skills for 2020" and the second article from Forbes on "The 10 Vital Skills You Will Need For The Future Of Work."

So, that's your task for today: examine your industry-education relationships. And explore those resources that you'll see in the Show Notes.

As always, find our podcast on PreparingTechnicians.org or subscribe Apple podcasts or Google Play. A rating and review is always appreciated. Our series is produced by John Chamberlain at CORD. Thank you, John. The project is led by the Principal Investigator, Ann-Claire Anderson. Thank you, Ann-Claire. And thank you, our listeners for Preparing Technicians for the Future of Work.

[music]

Please include the following citation when citing or using content from this podcast:

Lesiecki, Michael (Host). Preparing Technicians for the Future of Work Podcast: Episode 15, *Working "Remotely"* (audio podcast, transcript). Center for Occupational Research and Development, Waco, TX. May 2020. Retrieved from http://www.preparingtechnicians.org/