Heather:

Welcome to the Hurricane Labs podcast. I'm Heather, and today is part one of our Cybersecurity Teaching and Learning series. In today's talk, I'm chatting with Tom Kopchak, our Director of Technical Operations. We'll reflect on Tom's experience teaching pentesting and defense at Baldwin Wallace, his work supporting competitions like CPTC, and how he sees his experiences fitting into the larger world of cybersecurity. Tom, thanks for taking the time today.

Tom:

Sure thing, Heather. Thanks for having me on this.

Heather:

You do quite a lot in the community to help with the incoming generation of cybersecurity professionals. Can you share a little bit about your efforts?

Tom:

This past spring, actually, I had an opportunity to teach for the first time as an adjunct professor. That was an experience and definitely something I'm glad I gave it a try and definitely taught me some things that I hadn't really thought of working professionally otherwise. Some of the other stuff I work with is maybe not necessarily teaching, but it's still trying to focus on education. So I know we talk a lot about Collegiate Penetration Testing Competition, CPTC, but building that event, designing it so that it works at a global scale, but also focuses on skills that students need going into the industry, but they aren't going to necessarily get in school and making that a really valuable educational experience, that's been something I've been focusing a ton effort on the past eight years, probably at this point, to turn that into what it is now and really enjoy doing that. And just hearing from students years after they graduate, how that being something, is one of the most valuable experiences they have, that's awesome, always. I know you have a lot of teaching experience prior to working at Hurricane, as well.

Heather:

Yeah, I taught for 10 years in English, both high school and college level.

Tom:

Yeah, so Heather's basically the only reason that anyone at Hurricane Labs writes good.

Heather:

I don't know if I can claim that, but I do my share of editing.

Tom:

I definitely appreciate it for all the stuff that I get published. It is massively helpful, and it's actually interesting just having conversations with different people who may or may not be in the industry, but at least technically focused, how important it is to have some kind of technical writing background and help with that, too, just because we're used to dealing with technologies all day, and when you try to get other people and humans to understand things, it helps to have someone else look at that.

Heather:

You mentioned that you were teaching formal classes for the first time this year. Can you tell us a little bit about that and some of your other exploits?

Tom:

Sure thing. So I was asked by a professor that I work with, been working with for years, to take on one of the classes that they have in their cybersecurity program, focused actually around offensive security, penetration testing, and also detecting and remediating some of those types of issues, as well. It was a semester-long course, teaching those tasks twice a week, and got a chance to work with around 15 to 18 students who are juniors and seniors at Baldwin Wallace University. So that was definitely a new experience for me. Obviously, I was a college student years ago. It's a totally different position to be at the front of the room and not sitting in a seat and trying to think of things of... I'll look at what's material and what we want to cover, but how do I make it so that what I'm actually sharing in the classroom is relevant to students? How do I make the knowledge that they get as being there is something that they can look back five, 10 years from now and think this is still something that was beneficial, and this helped me be better in my career? So that was a challenge just to, how do I conceptualize that, materialize, and turn it into something that can actually be useful? And doing that every week, preparing for classes was just... And I'm sure you can definitely echo with me on this, Heather, the time in the classroom is just a tiny amount of what goes into the overall teaching experience.

Heather:

Oh yeah, significant amount more work goes into your one hour class or 90 minute class than what the students see in front of them.

Tom:

Yeah, absolutely. And conference presentation, you don't have to give someone a project or an exam at the end of it. That's a whole, whole other different thing. We can talk about that more later.

Heather:

Yeah, yeah, yeah.

Tom:

That was something I did a little bit, interestingly different maybe, based on some of the stuff I've learned working with Splunk.

Heather:

So you just finished teaching this class, graduation season is upon us, and now the next new wave of new hires are entering the workforce, which means companies and new hires are needing to work together to bridge the skills gap and bring these new graduates into their fully-fledged roles. What sort of skills should they be mindful to emphasize?

Tom:

So I think it makes sense to break things down to two really broad categories. There are technical skills and then there are non-technical skills. Honestly, the way I look at it is, technical skills, obviously that's going to be important and something that you are constantly going to have to learn, but that's also something that changes and is very industry, company, everything, specific, with the caveat there being

that there is base knowledge that I think you have to have. So things about even basic networking, how systems communicate, what happens when you type an address into a web browser and it loads, what does a firewall do versus what does a router do? Some of those basic understandings of, this is core technology. It's been similar the past 10 plus years and probably even going in the future is still good based knowledge. I think that's important things for someone coming into the field to understand, but specific knowledge, like how to configure Splunk to operate in a clustered environment or something like that, I wouldn't expect anyone coming out of college to know that specific skill necessarily. That's something that you have to expect if you're working for a company that works with Splunk, you would need to know that, but they would also train you to that, as well. That'll be a skill that's part of your professional development. So that's on the technical side, I think, base technical common understanding that you expect someone to have that's important. But the specific stuff, you really have to expect that that is something a company should be teaching you as part of the training process. And this is actually a question more than one student asked me. It's like, "When I'm looking for a job, companies just expect me to know all this stuff? And I'm like, "For an entry level position, no." I know we at Hurricane Labs, we hire people into plenty of entry level roles, like in the SOC and the Splunk roles, and there's certain things that we're looking for, but we don't expect someone who's just hired into the Splunk team to know how to architect a Splunk environment. So that's something that I think a lot of times, people who are graduating going into new positions almost might set the bar a little too high as to what technical knowledge they're expected to have for a new role with the experience level that they have.

Heather:

Yeah, that's something we've talked about is, the company having realistic expectations.

Tom:

Yeah, absolutely. And I think that's one of the values, too, of having internship programs, as well, either as part of the program or potentially something else even beyond that where you give students the opportunity to work in a realistic environment that is actually letting them do the type of work they would do as professionals.

Heather:

What about non-technical skills?

Tom:

So I almost think that this is more important, or at least equally important, to the technical skills. I don't know if everyone agrees with me on this one, but hear me out and let's see if we end up with a common understanding. But I think regardless of what you're going to do technically, you're going to have to interact with others and you're going to have to communicate with others. So as much as some of maybe the more introverted people, including myself I will add, you think you can just hide in a room all day and never talk to another person again in your life, that's not how the real world works. There might be some roles where you can do that, but realistically, pretty much anything, you're going to have to talk to people in some capacity. So understanding verbal communication, nonverbal communication, looking at a person, reading body language, reading inflections and voices, and those sorts of things, that can be really useful, especially when we're working remotely, too, to try to understand if someone's confused, need some more information or clarification, if they're frustrated or not, just trying to pick up on those sorts of things. We write a lot in this industry. You might not think like, "I'm writing an essay or an English paper." You might be used to grading there, Heather, but emails, that's something, ticket

updates, all of those sorts of things that are our communication method with clients, that is really a huge way that we communicate and stick ourselves out there as someone who is another human interacting with a human. When I was talking about this in class to students, they might have thought I was crazy, but I'm like, "Sometimes when I need to write an email that I know other people are going to read, I will have other people here proofread it and give me feedback on it." And just the concept of that seems foreign to a lot of people, but we all know when there's things that are bigger issues, that something you send is going to get passed around and read by other people, and you don't want to look like an idiot.

Heather:

You miss stuff in your own writing because you know what you intended, you know what you mean to say, and your brain will skip over typos, it'll skip over doubled up words, things like that, and someone who's reading it cold will see them.

Tom:

Oh, yeah. It's so much easier to see that in someone else's writing than your own. Definitely something that I found really useful to try to do. And actually one of the assignments that I had the students do was, I wrote up five emails and had them write a reply to each of them as a graded homework assignment, because that's the professional writing that we had to do. And I think that's really good experience, and that's something I never was taught how to do in school.

Heather:

And that's what you do with CPTC, too. CPTC is more than just the competitors having the technical skills, but they have to engage with you, the organizers, in a sort of role play environment, right?

Tom:

Exactly. So all the interaction for that is in character like you're working with a client. When they send emails, they're expected to address the person that they're talking to as if they're the customer that they're working with. And that, I think, is something that the role playing and all of that is not normal for a lot of the training events, but because we want everyone to have that experience of, this is what it's like in the real world, we try to do that. And I think there's also a big difference between different types of communication, too. So the way I write an email is different than the way I write an internal step-by-step documentation for something, and that's different from how I write a public tutorial that we post on our website, so knowing how to adjust the documentation so that it's adaptable to different environments and different audiences. And I think focusing on the lowest common denominator a lot of times is good for that sort of thing, too, so that you don't make assumptions about knowledge and that can lead to potentially bad assumptions happening.

Heather:

Yeah, that audience awareness and the purpose awareness, you need to know who is going to be looking at it and to what end are they looking at your document?

Tom:

Oh, yeah. And speaking of audience awareness, I think that ties into presentation skills, as well. What is there some survey, and I'm probably pulling out of nowhere, but on average, people would prefer to die

than to have to give a presentation in front of people, or something I've seen. Death is preferred over public speaking.

Heather:

I was one of those people. So when I was in high school and early college, I am one of those people that was hands shaking and standing in front of the class trying to give my little required speech to my high school teacher and stuff like that. Then, of course, I went into teaching, which is public speaking every day in front of perhaps the most hostile audience you can possibly have, is a room of 15 and 16 and 17 year olds that you're trying to teach grammar to. It doesn't get much more hostile than that. It takes a lot of work, and that's something that, you might hate it, but it's a necessary evil, and it's something that does take practice and can be improved upon with practice, I promise you. I just kept taking every single, with my electives, acting classes and communication classes that required giving speeches until I just became more comfortable being up there. But those presentation skills are important, and it's something that people shy away from and avoid because it is intimidating. It is hard, but they're so important. They are so important.

Tom:

Yeah, in my case, music performance has helped me a lot with being able to present because essentially, you're performing either way. I still remember the first time that I did a major music thing, and this was just sixth grade, playing one thing on the organ at a church service in front of the entire school, and that was the most terrifying thing in my life that I can remember. I will say it does not wear off, but there are things that you are more comfortable with than others, and you get better at managing that. So I think even having experience giving presentations, there's still things that make you more nervous than others. I don't want anyone to think it just goes away. But I think that it's really important to be comfortable with public speaking, and one of the things I actually did in class is, the beginning of each class, every student once, at least, had to pick a topic from something in the news and lead a conversation with the class about what that was related to information security. So this required everyone to at least be aware of things that were going on and then also have a conversation with people about the significance of that and answer questions and share some information about that. So my thought process along the lines of that was, there's always going to be situations where we have to talk about things. There's going to be clients, family members, anyone in between, who's going to have concerns, questions about something that's going on, and how do we get comfortable communicating that, talking about it, and responding to different viewpoints about it. Giving presentations and sharing that information, the audience is going to vary, of course. Other things about public speaking, I think having good mentors to the process and practicing that is a really important thing to do. I've done this before, and I hope to actually get back in doing it more, but just being someone who can help someone turn a presentation from something that is okay to something that's really awesome is something that I love doing. And that said, I still work with speaking coaches, too. For Splunk .conf upcoming in a month, I've been working with the same coach from Splunk for the past three, four years, and every time I learn something new, too, about how to be better.

Heather:

Changing gears a little here, something I've found daunting as a learner has been how dynamic technology is, meaning how it changes and how quickly it changes. So as someone who's been in the field longer, what's your perspective on that issue? And how do you recommend incoming techs view that changeability?

Tom:

Things evolve, and I think being in the technology field, things evolve and become obsolete. And I know they say in the tech field as you start, things you learn in your first years in college are obsolete by the time you graduate. I think I have different viewpoints about that. There were things that were definitely really good knowledge, and I think college should focus on the skills that aren't going to be becoming obsolete, or at least maybe give you some knowledge that you can apply later. Try to focus on the things that are going to stay the same and the base knowledge that you can know, the goal, the objectives, the how and the why maybe, but not necessarily the specific details. And from there you use skills and research and look into new technologies and find a way to solve the problem. So I think if you know the what you need to do, you can figure out the how.

Heather:

What's a key takeaway that you'd want someone to really focus on from your reflections?

Tom:

So I think the biggest one for me has been, how do we take everything that we've learned as professionals and package it into something that is a hard hitting set of these are the things that'll help you be successful. And I think focusing on the skills that we know people are going to need, and we see the biggest areas for improvement in the industry, are going to overall help everyone to get into a better spot professionally. So a couple things that we've talked about, the communication skills, being able to effectively share information with others, that being a huge takeaway. If everyone can just move the needle a little bit further to become better at that, I think we're all going to end up in a better spot, and if we can make that at least, maybe not necessarily a primary focus, but at least a key component of all technical education, I think that'll make a big difference for us as an industry.

Heather:

Definitely. All right, well, thank you very much, Tom, for taking the time today.

Tom:

Yeah, thank you, Heather, and we'll see everyone back for part two of this.

Heather:

That's all for today. In part two of this series, we'll dive into strategies for structuring and delivering a training program designed to teach the skills desired in technical professionals, including soft skills like communication and presentation. Until next time, stay safe.