

Heather:

Welcome to the Hurricane Labs Podcast. I'm Heather and today in part two of our teaching and learning cybersecurity series, we're taking a closer look at setting up training programs to advance your employees and help close the cybersecurity skills gap, including some strategies for teaching practices to strengthen the quality of your programs. Rejoining me today is Tom Kopchak, our Director of Technical Operations. Hi, Tom. Thank you for joining me.

Tom:

Hi, Heather. It's awesome that we ended up turning this into a two part series because apparently we both like to talk too much.

Heather:

Yes, yes.

Tom:

Our audience is still listening.

Heather:

So in our previous podcast, we talked a bit about what skills are necessary to be successful in cybersecurity and you emphasized soft skills, like communication and presentation skills, over the more technical ones. Can you elaborate a little bit on why?

Tom:

Yeah, for sure. So I think really one of the key elements of what we do as professionals is provide guidance to others about security. Regardless of what we're doing, you're going to have interactions with others that you have to do, and we need to find a way to be effective at that. So I would actually ask you a question then too, Heather, about that. Since obviously I'm focusing more on the technical side of things day to day, you're on the technical writing side of things, but also deal with a lot of the business communications that we put out. What do you see?

Heather:

For our audience's benefit, my background, I have 10 years of teaching experience as a high school English teacher before I joined Hurricane Labs as a technical writer and then content manager. It has been helpful for my role here at Hurricane Labs because having no technical background and working in this industry, it allows me to make sure that our documentation is as clear as it can be. When you know your content area really, really well as our analysts do, it's easy to assume that your audience knows it as well as you do and you might gloss over certain aspects that maybe shouldn't be glossed over. So my lack of technical background helps me catch those areas and make sure that when we put out these documents, that they have been refined to capture the instructions, the tutorials to their fullest potential.

Tom:

Yeah. I think that's a really good point, especially as someone who does a lot of the external documentation writing for client facing stuff. Just having someone else read through that who maybe

you don't necessarily know the ins and outs, but you know how to make things or verify that things are understandable. That is really helpful for me to have that second opinion and balance.

Heather:

Yeah, for sure. Having extra eyes on it's always... When we read our own work, we often, again, fill in the blanks and don't necessarily realize that we're even doing it. So helpful to have those beta readers who can go through and just make sure is this the most reasonable or logical progression of information? Is it presented as well as it could be and where are the weaknesses? It's a lot easier for someone doing a cold read to identify those points than it is to do it on something that maybe we've looked at and thought about for days, weeks, years on end, for those who have been in the industry for a while.

Tom:

Oh, yeah.

Heather:

So let's go ahead and transition into setting up training programs. How do we take someone who's within your own organization and you want to offer a pathway for advancement for them by offering internal trainings? What sort of considerations should organizations keep in mind as they work to build or expand their professional development training opportunities?

Tom:

Probably one of the first things you want to do is identify goals and what do you want your staff to accomplish? So is this something where you want to provide them additional skills for their job, which I'm assuming if you're setting it up for a part of your environment or your corporation, that's probably a pretty big deal, but is this something that makes someone better at their job? Is it something that's a needed certification for a role that they're doing? Is it something that's a nice to have continued education thing that maybe won't be day to day applicable, but can still help them be a better employee? I think identifying a goal is really useful and then identifying the audience for that as well is probably something you want to think of too.

Heather:

I think that also, you need to think about what experts you have who can offer trainings and give them the opportunity to step up into that role internally.

Tom:

Yeah, absolutely. I think the internal tribal knowledge that's built within an organization, identifying that and identifying individuals that are uniquely capable of sharing that information with others is really, really important. I can think back to some internships and even my first couple days at Hurricane where different people went through different processes, explained history of things, talked about why and how things were done. That experience where you sit down with someone who's an expert in how something works at an organization, explains it, and then lets you ask questions and is able to answer those questions is, at least for me, it was incredibly valuable.

Heather:

Yeah, keeping that human element is an important aspect of teaching and learning. I'll talk about that in a little bit when we get to our strategies, but keeping that is harder and harder as we're increasingly remote and there's this increased demand of on demand content. It's easy to lose that human element and it's important that we maintain it.

Tom:

I know on demand recorded, that's a really popular delivery model, but you do lose a lot of the face to face sort of thing. I'm sure both of us having, you having a lot of teaching experience, me having a little bit of that, you know when you're in front of a class explaining something, when people aren't getting it or not paying attention or whatever. There are ways that you can more easily identify a gap in learning or knowledge when you can read body language, look at facial expressions, see where people are staring, those sorts of things.

Heather:

Right. I think also touching on the initial building of the program, we need to make sure, actually have it be practical and actually real world scenarios and things like that so that your trainees have the opportunity to see the skills being applied in real world situations.

Tom:

I agree, and this is something I always struggle with as a student or a learner or whatever we want to call it. There are so many times where you know the example you're giving is clearly fake or it's made up for the sake of something that's easy to demonstrate a certain thing. There's not necessarily something wrong with that from a first learning how to do something because you can control the experience a lot better and ensure that the objective that you're trying to teach is accurate, up to date, all that sort of thing. But just as an example of using Splunk, if the sample file that you get imported has timestamps in 2014 and you have to do crazy workarounds in order to even search it as a example, that is something that I feel like this doesn't necessarily reflect reality, but it's hard to do realistic things in a way that's repeatable. But whenever I'm looking for examples of things or explaining things, for me, it's really important to have something that I can show that relates to something that you might actually see in the real world, or at least explain a why.

Heather:

I mean, it makes it much more tangible.

Tom:

Yeah. Those are the kind of examples I really like, just to make something more realistic, making it something that you can see and experience and teach through the example as well. The other thing is thinking about presenting and sessions at conferences and all of that, I mean, I'll admit that my style of presentation is probably a little bit different than what you might see from a lot of people because that's feedback I've gotten before, but I think it's good to take serious conference presentations not quite as seriously as they could. Inject humor, get people involved, ask questions, make it so that you're not just up there on your throne proclaiming information to an audience, but making the audience feel that they're a key part of that session, and find a way to be a little bit more entertaining. I get that that's not how everyone operates, but I think if you're up there...

Heather:

There's an audience awareness part, you know?

Tom:

Yeah.

Heather:

Give people a heads up that they need to really self monitor because this is important, but it's also going to be intellectually demanding for them to stay engaged with it and it'll give people a chance just to shore up their thoughts and make sure that they stay present. Giving people the chance to have agency over their learning is a teaching best practice.

Tom:

Are there other things that you did as a high school English teacher to try to keep people engaged or less likely to lose focus?

Heather:

So where I spent most of my teaching career was at Akron Alternative Academy. So I worked with students who were at risk for a variety of reasons and I had a lot of students who needed movement. They needed to be able to actually engage in a tangible way with the content. You're saying that boring tone where you talk in monotone, don't do that stuff if you need to keep them engaged. You need to keep your learners engaged, whether you're teaching high school Shakespeare or you're teaching at a professional conference. You need to be aware that humans have a limited attention span and there are other things that are engaging their brain at every given moment. You need to accommodate that. Having that tangible side for my students worked extremely well. It all comes down to recognizing the humans you have in front of you and what is it that they need, meeting them at their level, and helping them achieve whatever goal it is you have. You talked about those goals. What can you do as the expert in the room to help those humans in front of you achieve the goals of the company, achieve the goals of the course that they're taking with you? Sometimes it forces you to come out of your comfort zone. So bring us back. Another structure that internal trainings should make room for is learning groups. Giving people the chance to have a study group or even if it's a Slack channel or what have you, where other people going through the same training, who are at the same learning level as them can get together to talk about topics and share what they know, including that in the structure of what you're building as a training program can offer a great deal of value I think. I know we have Linux learning group I think. I'm not sure. Are there others, learning groups that we have?

Tom:

Yeah. So I think the new hires on the [inaudible 00:12:20] side are working together. There's ticket training groups that the Splunk team does on, I think, a daily basis to learn how different processes work and get exposed to what other people are working on. So couple those different things. When I teach internal Splunk training to new hires, I'll typically do that in a small group of whoever's hired at the same time. So similar.

Heather:

Yeah, and that's such an easy thing. That's a pretty low cost in order to be able to provide learning groups for the people going through your trainings. Doesn't have to be anything that's super formal, but

it does create that community of learners and it will strengthen the sense of community within your organization.

Tom:

Yeah. I think practice working in lab environments and having the opportunity to screw up in a way that isn't going to impact something that's going to cause a problem is really important for that.

Heather:

You do have to also cultivate the opportunities for them to practice those skills before you expect them to legitimately be experts on it. They need the practical experience, those 10,000 hours to really hone the skills that you've just provided the training on.

Tom:

When I first started at Hurricane, we were working on a lot more network management, firewall management type projects and having the opportunity in the lab environment to test things out, try things, see what happened, tear it all down, start over, and just go through that process, and then also teach other people how to do that process, that got to the point where you could go and do a lot of the standard stuff without even necessarily thinking about it. It was just mental autopilot for a lot of that, but you became really comfortable with that sort of thing just from having practice and opportunities to learn. Likewise, I think some of the areas where I learned the most were when I was forced in a position to solve a problem. So late at night, something goes wrong. You can't figure out what's happening. Someone who you would call isn't available. It is basically on you to figure out how to get something working so that the client has a good experience. I can think of a couple situations where I absolutely learned a new way to solve a problem because of a situation like that.

Heather:

Giving people the opportunity to problem solve is definitely a major learning opportunity. It's those light bulb moments that, as teachers, as educators, you strive for, where all of a sudden the practical application of the things they've been learning suddenly makes sense and they are able to also take that agency and feel that pride. Hey, I figured this thing out and how exciting figuring those things out can be.

Tom:

Yeah, I can think of so many examples where something didn't make sense. Something didn't make sense. I wasn't sure how to do something and then there was a situation where you finally got a way to figure out why or how to do it or to actually solve a problem, and then it clicks, like, "Okay, this is why that matters. This is why I need to know that." It's almost like a line in the sand where you go from not really knowing, to being pretty confident with that one specific thing.

Heather:

Let's go ahead and now talk about some of the methods we're teaching. We have touched on this a little bit, but what sort of strategies should organizations plan on accommodating that will then strengthen the quality of their program?

Tom:

So I know a big one for me is ensuring that material is relevant and up to date, but provides the necessary historical context to understand the why. This past semester, when I was teaching, we were learning about security issues, security best practices, and different types of attacks and compromises that happen, but a good example was there was a Linux kernel exploit that occurred right in the middle of class that was something that affected basically anything that was produced in the past decade. That was something that was right in the news and all that. The day after it came out, we had class and actually the student who was going to talk about a common thing that was happening in the news, picked that, which was awesome. Then I didn't have to worry about introducing that as a separate thing. So that worked out really well, but then it's like, "Hey, let's demonstrate this." Fire up a virtual machine, take the actual proof of concept exploit, show it to the class, and work out what you can do with it. That is something where you hear about these things that are happening, but the seeing it, and the understanding why I think is really beneficial for that. Those are the sorts of things that I think as a student myself, I would remember. We also had someone in class who was like, "So what happens when you get ransomware?" I'm like, "Here, let me grab a laptop, we'll download some ransomware, we'll run it, and you'll see." Now, obviously I had to make sure that wasn't connected to other networks so that I inadvertently launched a ransomware attack at the university, which did not happen.

Heather:

Yeah, we should avoid that.

Tom:

Yes, but that sort of thing, as a security professional, you're going to probably run into a case where something like that is something you have to deal with, some kind of malicious software, some kind of attack, and you don't want to necessarily the first time you see it to be when it's happening. So controlled environment, lab environment where you can see what's happening, you know it's not going to cause a problem, people have questions like, "What happens if you try to do something to stop it or what happens if you change the clock on your machine? Does it cause the system to behave differently?" We got to see what that did. It doesn't buy you more time for the ransomware, in case you're wondering. At least with [inaudible 00:18:21] in this example, but, hey, it was something that a lot of the students just hadn't seen what it looks like as the recipient of a malware attack.

Heather:

That brings us back to making it tangible, incorporating human connection to teach while still having videos available. It's the best of both worlds.

Tom:

Yeah, and this ties into the way to develop some of the tutorials and content that we create. If I have a general idea of how to do something, written documentation of a process or something I can use as a reference is probably the most useful for me, just so I don't have to think about making errors and configurations of that. I have a known working example that I can use. If I'm just learning something from scratch and don't have a lot of background, having someone guide me through the process and seeing it the first time is really helpful. So I often find myself, I'm documenting the same thing more than once, using different approaches so that depending on who the audience member is using, that they get either experience.

Heather:

Another approach, and I think this is one you've talked about, Tom, is turning learners into teachers, giving them the opportunity, not just to collaborate with the expert in the room, but again, especially with those learning groups and within the class itself, giving them the opportunity to teach what they're learning to someone else can really help to cement the knowledge that they're acquiring.

Tom:

Absolutely. Teaching something is the best way to become better at knowing the material I think. Having you be put in a position where you need to be familiar enough with something to share that information with others and answer questions and lead an intelligent conversation, I think that forces a more in depth understanding of material than just sitting there and trying to digest it. So in the class I was teaching, everyone had to give a brief presentation about something that was a current event and lead a conversation about that. Depending on the topic, that was 10 minutes to half an hour of class that we spent on that. I like to see students drive that conversation, ask questions, and then use that as an open forum to discuss a topic.

Heather:

Turning learners into teachers and being able to then take the content they're learning and then teaching it to one of their fellow learners in the class, it forces these learners turned teachers to communicate on a more user friendly level. So being able to practice communicating with their learning peers to convey the knowledge that they've acquired again, that comes back to I was talking about before what my lack of technical background allows me to catch is that I'm able to prevent us from glossing over points that shouldn't be glossed over. So that practice will help these students with that as well.

Tom:

Yeah. The practice and being familiar with that, it just makes a huge difference. I recognize I'm one of those weirdos that likes public speaking for some reason, but I think with some practice and some opportunities, everyone can get better at that.

Heather:

What about for assessing learner's progress? How can we better accommodate that?

Tom:

I think without going too deep into things, having some way to demonstrate, I don't even want to say mastery, but competence is going to be something that I think is beneficial and figuring out how to do that. Whether it is, going back to when we first started with firewall upgrades and things like that, or when I first started that, you would go through the process where you build something, practice doing it, and you do an onsite upgrade with someone who is more familiar with the process, one of our experts. Then as time went on, you got to the point where you would do those on your own, and you would go through the process and you'd be the face of the company for the client. You'd be familiar with that. Then you'd move into a role where you're teaching people how to do it and you're the one that goes there, lets them learn, experience issues, and help them through working through the challenges you might run into. So that three step phase of start in a lab, working with someone through an example, doing it on your own, and then teaching someone is how I think that progression works from a mastery of material perspective.

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Heather:

That really brings us back to how we were talking about resources, the human resources, and turning learners into teachers and giving people internal to the company the opportunity to pass on their knowledge and for them to develop in that direction. This is all a very cyclical program. It should be self feeding.

Tom:

Absolutely and I always love seeing people transition from not having a lot of experience or familiarity with the process to be able to do something on their own and even teach other people through it. That kind of takes us full circle. We start with needing to educate and then we become educators ourselves.

Heather:

All right. That's all for now. Thanks for joining us. Until next time, stay safe.