

Completing a 4-Year Degree in Cybersecurity Through the CA Community Colleges

ICT Educator Webinar Series

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[00:00:00]

Introduction

[00:00:00]

STEVE WRIGHT: It was about a year and a half ago that I was requested to present to the joint legislative oversight here, hosted by José Medina from the Committee on Higher Education and Jackie Erwin from the Committee of Cyber Security. We talked about future needs in Cybersecurity and various four-year degrees and things like that.

It was a nice meeting, and we decided, at the end of that, we should do more to try to improve our articulation at that time. There's still kind of an issue with how we do articulation with CSUs, primarily because this is a rapidly evolving field, and the traditional notion of IT being certification based and most appropriately dealt with at the community colleges has created an environment where the CSUs specialize in Computer Science and Management of Information Systems, and the idea of having the lower division or upper division of what we call IT in the community college system is not something that's traditionally been there, but it's something that's growing and changing now in today's environment.

Quickly, just some notes from that meeting... And by the way, our guest from National University, Chris Simpson, was with me in that meeting. As everybody talked and bemoaned about the lack of Cybersecurity education, he was going, "We have that!" Do you remember that, Chris? That was something else.

Anyway, just very quickly from then it hasn't changed much. Depending on who you ask, we've got somewhere between 45,000 to 70,000 open Cybersecurity jobs right now, and increasingly, they're asking for bachelor's degrees—it's more complicated these days.

In the community college system, we have about 27,000 students who take an IT course at any particular time at one of our 114 campuses. We have relationships with high schools doing

CyberPatriot activities—we have about 205 active competing teams we support. 64 of our campuses are Cisco academies, and 70% of our colleges have purchased or have access to an online computer lab to help facilitate the training and IT curriculum. We have 333 IT faculty across the system, 71% with master's degrees.

So, the community college system is well prepared to launch students in the IT field, but then what happens?

Today, our investigator subject matter expert at large, Shawn Monsen has been working in the field and with colleges to make better alignments among the private education, and he's going to help us today meet Chris Simpson and understand the offerings of the various private institutions.

Meanwhile, Steve Linthicum, one of our Deputy Sector Navigators, formerly in Sacramento and now in Orange County, has been doing a very good job of grassroots, working with faculty. As we know, you can sign any agreement on paper, but if you don't have engagement and involvement at the campus level in making it work, then sometimes it doesn't work.

We're going to hear from both of them today, and at this point in time, Shawn, I'm going to turn it over to you. Are you ready?

SHAWN MONSEN: I am ready, willing, and able!

STEVE WRIGHT: Thank you.

[00:04:00]

The Need for Cybersecurity Professionals

The Cybersecurity Industry Problem

[00:04:00]

SHAWN MONSEN: All right, can you see my screen?

STEVE WRIGHT: Yes, we can see it with the slides down the side and the main screen, yeah.

SHAWN MONSEN: All right. Let's put this in presentation mode, and hopefully...

So, Steve asked me to talk today about the work that we've been doing around articulation agreements with some of the private colleges, and we're also heading down that road with some of the state colleges as well.

As Steve mentioned, really the problem statement here—the thing that we're trying to solve—is...

STEVE WRIGHT: Excuse me, Shawn—it appears as though, on my screen, part of what looks like the left-hand side of your slide is clipped off.

SHAWN MONSEN: Uh-oh.

STEVE WRIGHT: You may have to reset your thing. That's good right there, if you want to do it that way.

SHAWN MONSEN: Yep, let's do it that way.

STEVE WRIGHT: OK. [00:05:00]

SHAWN MONSEN: Thanks for that, Steve.

So, the idea is that in the Cybersecurity space, we have (and will continue to have) a deficit in the supply of qualified individuals to fill the Cybersecurity positions that are available. I just read a recent industry survey last week that just solidifies this, and the fact that it's continuing to get worse, the gap between qualified individuals to fill—

STEVE WRIGHT: Shawn, you went mute on us.

SHAWN MONSEN: Yep, it looked like there was a global mute that happened there.

STEVE WRIGHT: Oh, OK.

Step 1 – Create and Implement the ITTP – Sec Pathway

[00:05:56]

SHAWN MONSEN: So, really, the first step was for us to try to build more Cybersecurity-related programs within the community colleges and the work that we did last week around the IT Technician pathway for Cybersecurity gave our community colleges really a road map for developing Cybersecurity programs at the community college level. We rolled that out last year, and community colleges have embraced that and are, in fact, creating Cybersecurity-related programs at the two-year associate degree level.

Step 2 – Develop articulation agreements

In addition to that, the next step that we talked about taking was then creating articulation pathways between those two-year programs at the community colleges and the four-year Cybersecurity degrees that are out there.

Currently, we also have a **deficit in terms of the number of four-year programs at state colleges**, so we broadened our scope and started including four-year programs from private colleges as well. So, the good news is that we have a combination of both private and public four-year Cybersecurity programs that we can articulate our two-year students to.

Current Agreements

SHAWN MONSEN: So, currently, we have agreements in place with **National University**, and they're here to talk to us today, and because of that, I thought I would talk a little bit about the process that we followed and where we're at in terms of our articulation agreement with National University.

But in addition, we have agreements in place with **Western Governor's University** and **Southern New Hampshire University**, and we are also in talks with **CSU San Bernardino** to put something in place with them for their Cybersecurity degree as well.

[00:08:17]

STEVE WRIGHT: Excuse me, Shawn—could I ask you a question?

SHAWN MONSEN: You bet.

STEVE WRIGHT: When you say, “these agreements in place,” these are agreements based on this common platform of the IT Technician pathway/the IT model curriculum. There may be other articulations throughout the system that are more customized—is that true?

SHAWN MONSEN: That is correct. So, what we've done with National University is we are getting down to a school-by-school articulation pathway for each of those colleges. As we were going into this, we were hopeful that we might be able to get statewide agreements in place, and we do have one of those in place with Western Governor's University based on the CID statewide numbering system, but many of the colleges are going to and, at some point, will need to get into a college-by-college agreement with Western Governor's as well.

The articulation agreement is a very specific agreement between two colleges that says, “For these specific classes, we're going to give you credit for these classes in our program,” and it actually goes down into great detail in terms of the general education requirements and all of those things.

So, yes, we have a statewide agreement in place with Western Governor's, and we have school-specific agreements in place with National University. So, yeah, did that answer your question, Steve? [00:10:00]

STEVE WRIGHT: Yes, it did. Thank you.

SHAWN MONSEN: All right.

[00:10:07]

Cybersecurity Articulation with National University

Why National University?

[00:10:07]

SHAWN MONSEN: So, you may be wondering why specifically we chose National University. They do have a **very robust four-year Cybersecurity bachelor's degree**. As Chris will tell you in a little bit, they also provide **generous scholarship opportunities** for our community college students, and honestly, they are just **genuinely interested in establishing relationships** with us and with our community colleges and creating pathways for our two-year colleges. They've been very supportive in this process.

Project Team

[00:10:45]

SHAWN MONSEN: So, specifically, the project team, as you know...

- Steve Wright is our fearless leader and our sponsor. He is the person that directed this work in the first place.
- I was the Project Lead for the community colleges.
- Joseph Allen was the Project Lead for National University.
- Chris Simpson, who is on the call today, is the Director of National University Center for Cybersecurity and, basically, their Academic Program Director for their bachelor's degree.
- Jorge Salas is the actual Registrar at National University that worked closely with us to put these agreements in place.

[00:11:25]

SHAWN MONSEN: So, the process... We started this with National, and we hadn't gone through this process before, so a lot of it was just defining what the process was like: defining what the **scope** of the project was, what we were going to do and what we weren't going to do, defining the **steps that we were going to follow** to actually go through the process. We identified a handful of **target community colleges** that we would put these pathways in place for, and we rolled up our sleeves and got down to the business of actually **building pathway documents** for a number of our community colleges that have Cybersecurity programs.

I have to say Jorge was the person that did most of the heavy lifting in terms of actually looking at the community college courses and aligning those with National University's courses.

The Results

[00:12:23]

SHAWN MONSEN: So, what were the results? We actually have articulation pathway documents in place for these colleges:

- Coastline
- College of the Canyons
- Cypress College
- Long Beach City College
- Mt. San Jacinto
- Riverside Community College
- San Diego City College
- Sierra College

So, we have pathway documents in place for all of those colleges right now. There are a few more—probably four or five more—colleges that we need to move in that direction with, but we do have pathway documents in place for all of these colleges.

Moving Forward

[00:12:57]

SHAWN MONSEN: So, what are our **next steps**? The good news is that now we have what we feel is a well-worn, well-established process for taking the community colleges through this articulation

process. We have excellent relationships with National University. Chris and Jorge have been extremely helpful during this process.

For our side, we feel like we need to work with those community colleges that have those pathway documents in place to actually create formal articulation agreements, and again, those will take place between the articulation office at each one of those colleges, and Jorge will put in a formalized document that talks about all of the classes that will be part of the articulation agreement.

The next step is then for those community colleges that weren't part of the first group, we need to identify our points of contact with those colleges, get them connected with Jorge, and work out the details of the articulation agreement on a college-by-college basis. We'd like to have all 11 of the community colleges that have Cybersecurity programs articulated to National University by the end of this year.

That's it for me!

[00:14:25]

STEVE WRIGHT: Well, thank you, Shawn. I think it's important that you pointed out that, in every case, we work with the Articulation Officer at the college to have that final gateway clearance at the college level. Nothing here is done without their involvement. What we initiated here is a facilitation process to make it easier to do this and to help our students as a result.

OK, is Chris queued up next to go?

[00:14:51]

About the Cybersecurity Program at National University

[00:14:51]

CHRIS SIMPSON: All right, good morning, everybody. I'm Chris with National University. Does everybody see my slides?

STEVE WRIGHT: Yes, we do. [00:15:00]

CHRIS SIMPSON: I'm going to give you a little overview of National University and talk about our bachelor's in Cybersecurity program and then the transfer program that Shawn mentioned.

I really appreciate all the support that Shawn and both Steves have given us in building these pathways, because we know, as an institution, (and I think everybody here knows) there's a huge shortage of Cybersecurity professionals, and it's a great career path, too, for people from all different backgrounds.

Who is National University?

[00:15:40]

CHRIS SIMPSON: So, a little bit about National University...

We have an accelerated format—our classes are **four weeks in length**. They're 4.5 quarter hours, and students only take one class at a time, so it's a really busy month, but they're focused on one topic at a time. This tends to resonate with a lot of students, especially those that are working.

We conduct our **onsite classes in the evening**. They're twice a week, 5:30 to 9:30, plus one Saturday, and there's a bit of an online component in the bachelor's program, too.



This is a zoom-in of our locations in southern California/San Diego area.

Program Intro

[00:17:15]

CHRIS SIMPSON: So, you know the goal of our Bachelor of Science program in Cybersecurity is to prepare students to enter the Cybersecurity field. It's a broad introduction to a variety of different topics. I think we cover many of the topics most of the community colleges do:

- Operating systems/networks
- Cloud computing and virtualization
- Writing and a little bit of data analysis
- Project management
- How to handle incidents
- Threat intelligence
- Security automation

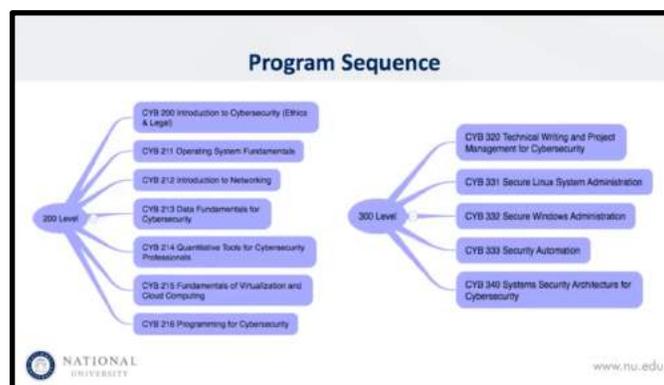
Then we offer two concentrations. Students can pick one or the other:

- Computer network defense
- Digital forensics

With Computer Network Defense, we teach students how to defend computer networks and systems, and we take a little bit of a deeper dive in this concentration into operating systems security, wireless and mobile security, cloud and virtualization security, and a little bit of advanced network defense.

In Digital Forensics, we focus on the fundamentals of Digital Forensics: operating systems, mobile devices, network forensics, and associated legal issues.

Program Sequence



[00:18:22]

CHRIS SIMPSON: So, this map here highlights our lower-level courses, and we've been pretty successful in most of our articulation agreements so far. With most of the schools, we've been able to map most of these out.

CYB 214 is going away. We had initially put that in because there were more knowledge units for CAE tied to that one, but some of those have gone away, so that course is actually going to be gone for future students, but we've been pretty good at mapping most of these other courses with most of our community college partners.

At the 300 level, we ramp it up some more, get into system administration, automation, and a little bit of project management.

Then at the 400 level, we get into a little bit of auditing, threat intelligence, incident handling, ethical hacking, network defense, and some planning and policy, and then the students move into their different concentrations.

What Makes Our Program Different?

[00:19:30]

CHRIS SIMPSON: So, what makes our program different? I mentioned the **accelerated format**. Our **average student age is about 33-ish**. Actually, we're starting to see younger students enter into the bachelor's program.

Like I mentioned, we are a **Center of Academic Excellence** in Cyber Defense Education, and that's for our master's program. We've had that for six years now, and we'll be up for re-designation in 2020, so we're going to put in our bachelor's program as part of that **[00:20:00]** designation. If all goes well, we'll have that designation for that program to next spring, and we designed the program from the start—we mapped the knowledge units and things like that.

Most of our technical classes—actually, I think all of our technical classes—have some type of **hands-on labs**. We use a variety of outsourced labs: InfoSec labs, Circadence, NICE Challenge, a bunch of free labs that we use in our classes.

We have some **mappings to certifications**—like our CYB 200 is pretty much a Security+ class, our networking class is Network +, and our initial cloud class is Cloud + certification mapping, and we're working on some additional certification mappings, too.

Our primary faculty are adjuncts, and most of them work in industries. We've got faculty that work at some of the major defense contractors, government entities, and things like that.

We have a three-course capstone class, and students have to go out and do a real project with that. We've had a lot of success with that program in our master's program, so students go out and do security assessments for organizations, and they give them free work. We have kind of

a boilerplate agreement where we get a hold-harmless for our students to make sure they don't get sued or anything like that if something does happen to go wrong.

Our first bachelor's cohort is actually in the middle of their three-month capstone classes. One team is doing support for a small company. They're doing the new NIST 171 assessment for them, which is what DoD contractors have to do. Another team is doing some curriculum development, and another team is there using the forensics database that's out there that enables post-graduates.... They're doing a forensics project on that.

What types of students should enroll in this program?

CHRIS SIMPSON: What types of students are good for our program?

- Students that like solving problems
- As everybody here knows, they need an aptitude for technology
- We have a pretty high veteran and active duty military population. We run about 50% to 60%.

What types of skills or knowledge should a student have?

- Systems-thinking mindset
- Comfortable using technology
- Critical thinking
- Problem solving

We also have an advisory board. They highlight that being a team member, being able to write, and being able to manage projects are critical skills that employers look for nowadays.

What are the types of jobs a graduate can potentially apply for?

These are just some of the sample jobs that students might be able to get after they complete our program:

- Information Security Analyst
- Entry-level Pen Tester
- Entry-level Incident Responder

- System Security Administrator
- Computer Network Defense Analyst
- Entry-Level Digital Forensics Investigator
- Information Security Engineer
- Red Team Technician
- Vulnerability Analyst

Program availability

And like I mentioned, we do on-site and online. Right now, we run four cohorts a year, one for each specialization, and one on-site and one online modality. Like I mentioned, our on-site are here in San Diego.

But the nice thing about our one-month format is we’re a little bit more flexible in when we can start, so we tend to do year-round starts.

What are the scheduling recommendations?

We really encourage students to take their Gen Ed classes first, get those out of the way, and then follow our sequence—we kind of scheduled a cohort model. That doesn’t always work out for students, but that’s kind of what we like them to follow.

Other Opportunities

We have an active **Cyber Club**. Last year, we made it to the Western Regionals for the WRCCDC (unfortunately not this year), but they’re participating in the National Cyber League. They’ve done MDR, Cyber Olympics. We tried the DEF CON qualifiers last year—we’ll probably do it again this year.

For the **DoD Cyber Scholarship**, we had two of our graduate students apply this year. None of our undergrad students did, but as we kind of build these community college pathways, we’ve reached out to some of our community college partners and let them know, “Hey, if you’ve got anybody coming in to us that way to apply, we’ll include them in the application process.”

The **College Transfer Program**, which I'll talk some more about... And we also do a **Federal Work Study Program**. We've got one student in it right now, and we're going to try to grow that opportunity also.

Transfer Program

[00:24:49]

CHRIS SIMPSON: So, a little bit about the transfer program...

Just like Shawn mentioned, Joseph Allen and Jorge have really been instrumental in getting this done. They have done [00:25:00] the lion share's work. They helped us get everybody together, and Jorge does an excellent job of going through the data and making recommendations for myself and my colleague Bill Reed to review it and assess.

So, the **Associate Degree for Transfer Pathway**—basically, it's a pathway for community colleges. If you get an associate degree from a community college, you can enroll in National University, and you're basically starting at the junior level.

It really offers a **significant discount in tuition** for students. It's up to 18 courses. You can reach out to me, and I can connect you with Joseph for more specifics, but up to 20 courses, they get about a **50% discount** on our regular tuition, so it's a great program and a great way for students to save money to get into the program.

If you are interested in doing this, you can reach out to myself or my colleague Bill Reed. It's good to just email both of us—we both stay pretty busy, and whoever is the first one available, we can kind of hop on it and get things rolling. If you can send us ahead of time your **degree program, course descriptions**, your **syllabi**, and an **outline**, we're happy to share ours with you, too. And if you're applying for **CAE2Y**, or if you're already CAE2Y, share that, too, and we're happy to build letters of support if you're going through the process.

Like I mentioned, we're going through our process of re-designation coming up here in the fall, so we're going to be looking for some letters, too. We'll just look at it—we're collaborative

with everybody—to identify where the equivalencies work in. Like I said, our goal is really to get students up right in at the junior level and get them in and get them trained with a quality education and get them out in the workforce. And we’ve got a **credit transfer calculator** that your advisors of the students can look at themselves at www.NU.edu.

Are there any questions? I kind of blew through everything pretty quickly—I’m happy to answer any questions.

[00:27:28]

STEVE WRIGHT: Chris, have you got any data on these? I know cohorts are kind of fresh, but how is your placement rate going? Are you getting students into interesting jobs?

CHRIS SIMPSON: Yes. For the bachelor’s, I don’t have any data—our first cohort is going through. I know, anecdotally, one student in the first cohort already was a veterinary tech and got an email. He’s a security analyst at a large credit union in the area now. Three of our students received scholarships from the financial sector ISEC, and they’ve got mentors in the financial community. One of our students, her mentor is the VP of Chase Bank.

Our master’s program... We get a lot of feedback from students about where they’re working—they’re working for some of the larger companies. For us, it’s kind of hard to get access to the specific data. We have a pretty good retention rate. Our master’s program runs about 80% retention for students that get through and complete the program. We still don’t really have the data yet for our bachelor’s since we haven’t completed it. But Bill and I are very hands on. We make connections with our students. We really want to make sure everybody gets through and reach out to students that might be struggling.

[00:28:55]

STEVE WRIGHT: Well, thank you, Chris. That’s very interesting and informative. We’ll open it up for more questions in a minute—let me just check the chat window really quickly. I see there are a few.

Chris, obviously, placement of students is very important to us. Anytime we find ourselves at the career centers or whatever, advocating at someone considering going to a private school, where their tuition is going to be more, maybe a CSU or something like that, then we want to make sure that it's really a valuable thing that's going to result in placement. So, keep on that data. We really appreciate seeing that coming in and how that's working.

Right now, we know there's a demand. I mean, it's pretty much a slam dunk for Cybersecurity, and it sounds like you're getting a lot of people that are incumbent workers maybe coming back. Do you give any credit for prior certifications at all, or is that something you guys done? If someone has certification from Cisco or CompTIA, do you give credit for prior learning for any of that?

CHRIS SIMPSON: Yeah, we don't give direct credit for certifications, [00:30:00] but we do map to a lot of the military credits. If they're veterans and they've been through the Navy, Army or Air Force IT cyber schools, we do some credit mapping for that, but right now, we don't do direct mapping for certification. We're working on doing **credit by exam**, so students can test out of a class.

[00:30:30]

STEVE WRIGHT: Yeah. These are all timely topics in our business these days, whether it's a public or private, is how to help with that. OK, thank you, Chris. We'll get back to questions, and right now, we're going to turn our attention to Steve Linthicum, who is our Deputy Sector Navigator in the Orange County.

Steve's background as faculty is one where he understands the importance of coming up with a pathway where the faculty are engaged and how that impacts the number of students that will actually consider the pathway. Steve, do you want to take it from here?

[00:31:01]

What Are the Exit Points?

[00:31:01]

STEVE LINTHICUM: Sure. Let me start out by saying that we all recognize for our students who are associates or not even at that level are going down that pathway. Ultimately, relative to businesses and the role of Cybersecurity professionals is they're going to hit something akin to a glass ceiling—we'll call it a firewall since we're talking Cybersecurity.

Basically, I think that this is important to recognize. When you go out and look at jobs beyond the technician level, just about every job offering out there insists upon having a bachelor's degree. Now, as to whether or not that's necessary, we've got to get past HR. Let's be honest here—oftentimes HR is the vehicle that blocks you, relative to being a serious contender for a lot of positions, and they don't understand Cybersecurity. They don't understand the sort of geek stuff we do, but they do understand putting that requirement as a bachelor's or higher.

So, I think we need to recognize the importance of going that direction of sending our students that way as they leave our programs, after completing them.

STEVE WRIGHT: You have been able to influence faculty at local colleges to initiate articulation processes. Could you tell us a little bit about how you did that and why you think that's important?

[00:32:28]

STEVE LINTHICUM: OK. First of all, I'm fortunate in Orange County in that we have two of the three CAEs that are community colleges in California: Cypress and Coastline. One key component for colleges who are interested in becoming a CAE is you have transfer pathways in the four-year universities. So, part of the, in essence, pitch that I'm giving the other colleges in Orange County is the importance of having that pathway if they want to go through and get the CAE designation—and a number of them do.

So, from bringing in my faculty roots, I understand that faculty ultimately need to have the buy-in relative to going down this pathway, so what I've been doing is identifying community colleges here that have those courses that are typically the root of our Cybersecurity pathway. Typically, they are...

- A+
- ITIS 110
- ITIS 150 (network class)
- ITIS 160 (Security + related course)

So, with that package, and perhaps adding a programming (Python) course, they really meet the objectives of learning knowledge requirements associated with the CAE designation, so that's the pathway I'm running with.

With those in hand, really, I think you have the core courses for a pretty good articulation pathway into a university like National or these others. You've got your General Ed and get those done, and then you take those core Cybersecurity pathway courses, so that is what I'm working on with regard to the ones that do not currently have pathways into National.

STEVE WRIGHT: And have you been able to get the faculty to initiate the process for the articulation?

[00:34:38]

STEVE LINTHICUM: Yes, and that's exactly what I'm doing: I'm going around from college to college. We have nine colleges here in Orange County: two of them already have the pathway, five do not, and the other two simply do not have the sort of courses in line—and probably won't, [00:35:00] frankly. We see across the system that not all of the colleges are really the candidates for this sort of approach.

Most, though, are, so one of the first things that I did was to actually go through and identify my colleges that are potential candidates, and I'm working with them. I'm attending department meetings. I'm giving my faculty pitch and why I think it's so important—and I think it is critically important—that we have these pathways into bachelor's programs.

STEVE WRIGHT: So, the faculty that you work with (and this is really a question of tops-down versus bottoms-up, as we discussed the other day) do they talk to their students? How do we get the through-put? How do students become aware of these pathways and this articulation? You represented the other day that if the faculty don't know to support it, it's not going to happen. How it happens in the classroom is, in essence, what faculty are charged with doing and are certainly willing to do, because their concern about maintaining their programs and having better enrollments is getting the word out that the end-all is not completing the community college program.

The end-all is, first of all, being a **lifelong learning candidate**. To every one of my students over the years, I've said, "Don't go into this field, don't go into Cybersecurity unless you're a lifelong learner, because frankly (and we all know why), things change so dramatically, so quickly in this occupation." So, they're going to have to be a continuing learner anyway, and you might as well get the sort of academic credit and move up the chain of degrees as you go through with your continuing learning process because it opens up your doors. It, frankly, opens other doors with a bachelor's degree. Hopefully, you have better soft skills and a better understanding of the world and then move on from that up to, for example, a master's program.

So, I think the pitch here is that, so long as we have exit points and we create more exit points, it isn't just into a job as an exit point for our associate-level program; it's to higher education, and that's a key component. All of you should become familiar with the **new funding formula** to see where this is really important. Bottom line: money to your college. As people leave your programs and go to get their bachelor's degrees, that counts—that's money to your college. So, I think it's essential that we all understand that we're benefiting our programs and making them more attractive by having an **exit avenue that is not just to a job—it's also to higher education**.

[00:38:00]

Questions

[00:38:00]

STEVE WRIGHT: Well, thank you, Steve. I want to shift back now to the larger group and some of the questions that are coming in. And the point that you made here and made the other day is something we've all seen at community colleges: the **communication channels to all the students are primarily through the faculty**. And your point has been and still is that if the faculty are involved in the process of recommending the articulation, then they become a more vocal voice to the students to actually achieve the result, because we can do a lot of wonderful things on paper, but if the students don't follow, nothing happens. I think both sides of the issue are really wonderful.

Shawn, do you have any wrap-up comments on how you see this process going? Do you have any resource materials to share with the group?

[00:38:53]

SHAWN MONSEN: I can absolutely share the pathways that we've already put in place that links to the online resources there are that show the pathways that we have in place with Western Governor's and Southern New Hampshire. As I mentioned, we do have pathway documents for National as well that we're happy to share.

I did want to say... You were just talking about the need for buy-in from the faculty to drive this into the classroom. The other piece of that is, for those colleges that have articulation agreements, it's important for us to pull in the counseling staff as well as they're meeting one on one with those students when they're deciding what they're going to do during their two-year career plus their four-year articulation. So, in addition to getting buy-in in the classroom from our faculty, we also need to make sure that we're pulling in the counseling staff at the colleges—they're the ones that are actually giving students advice about those four-year pathways.

[00:40:00]

[00:40:02]

STEVE WRIGHT: I like the connection to the high school ones as well. I mean, one of the shocking things I heard a long time ago—and it was in San Diego of all places, where National is pretty strong—was the high school counselor’s advising students not to pursue IT in community college because they could not get a four-year degree. So, I’m thinking, “Here we are facing this huge demand in a changing technology environment, and students are being told, ‘Don’t go there!’”

So, it has been our mission here in the ICT sector team to try to find these pathways, one way or another: through the CSUs or “hey, we’ll do it ourselves if you want us to, but we’re kind of told that’s not a good idea.”

Now, through articulation with National University and others, I really want to thank Chris and the team at National University for stepping up and really being accessible to us in helping this happen. In the near term, that’s the best overall solution. Chris, you guys are going to get a lot of competition as everybody else wakes up—I’m sure you know that—but you guys are way ahead.

So, any questions from the group here? You can either chat them... Or I believe people are unmuted—is that correct, Nicole? We will have slides available. This is a recorded session. Comments from the group? Go ahead.

[00:41:32]

AUDIENCE MEMBER 1: *Yeah, who can we talk to, to figure out these pathways and get some more information on it?*

STEVE WRIGHT: Well, we have published information. The IT model curriculum has been developed by the faculty at the community college system, and there are updates to it right now—they’re on our new website, and there’s a Google Drive. If you look at the IT portion of the subsector on our IT website (which maybe Nicole can put up the new address for it here), you will find links to both the IT model curriculum and the IT Technician pathway.

The IT Technician pathway took the IT model curriculum and said, “OK, if you can’t go to school two years straight, AA degree is not your ticket. How do you get into this if you need to get

a job in six months?” So, the IT Technician pathway padded customer service and retail operations on the first stage, so people could get a job in computer retail, like Office Depot, Best Buy, or whatever, which it turns out, that’s where the placement agencies go when they’re recruiting for help desk and other things.

As we develop the IT Technician pathway as a bootstrapping kind of way for people to get ahead (and that’s all there—all the courses, all the listings), we found out a lot of executives in IT would look at it and say, “That’s how I got started!” So, we know we’ve emerged from third-party certification-driven two years or less, slightly retail, slightly help desk kind of thing, and now we’re rapidly moving into this new world of bachelor’s degrees. How do we Band-Aid that together or put the through-put in there? I think we’re going to see some wonderful developments.

I’m not sure if I answered your question, but the—

AUDIENCE MEMBER 1: No, that helps. Thanks, I appreciate it.

[00:43:25]

SHAWN MONSEN: It’s Shawn. I put my email link out there in the chat thread. Feel free to reach out to me. I’m happy to talk with you about the process and any questions that you might have about getting your college into the process.

AUDIENCE MEMBER 1: Yeah, I looked into the chat, Shawn, and...

SHAWN MONSEN: Yes, it’s actually “RMonsen.”

AUDIENCE MEMBER 1: Oh, there it is. OK, got it. Will do.

STEVE WRIGHT: I see that Nicole has put the link up to our website, and under the IT portion, you’ll also find a handy little one-pager called **IT Readiness Inventory**, and it’s pretty much a list of all the things you might want to do on your campus to be IT ready as a community college. So, it’s a good list. If you then want to take that list to turn around and come up with a request for funding from Strong Workforce funds, it would be a very justifiable tool to use to develop that request.

AUDIENCE MEMBER 1: That's the Clark Center?

STEVE WRIGHT: On our website, under IT, you'll find the IT Readiness Inventory.

AUDIENCE MEMBER 1: OK, got it.

STEVE WRIGHT: And that's a helpful tool for just that purpose. Any folks from the CSU system on the call that want to speak up or say anything? OK, any other colleges out there, private or public, that have a four-year alternative that want to say anything right now?

Shawn, do you recall the email we got from the person [00:45:00] from College of the Deserts that they have an articulation to UC San Bernardino?

[00:45:07]

SHAWN MONSEN: Yes, yes. UC San Bernardino has a CS program with a focus in Cybersecurity.

STEVE WRIGHT: But that would be a customized articulation?

SHAWN MONSEN: It is, yep, and my conversations with them led me to believe that that's the only type of agreement that they're interested in putting in place, is a specific college-to-college agreement. It's incumbent on the community college to actually look at their courses and determine if there is a connection between the community college courses and San Bernardino's courses, and then they will look over that mapping and either approve it or give feedback, is my understanding of the process.

STEVE WRIGHT: Yeah, and once again, our goal here is to come up with as many agreements based on a generic curriculum (the IT model curriculum or IT Technician pathway), so a student could take one course at one of our community colleges and maybe another one at a community college, and eventually, that would be an interchangeable way of moving forward in your life.

We do hope—and I know there is a pilot that's going to be happening with the community college system—to learn how to give credit for third-party certifications, so we'll be testing that soon. And I think, in this particular world, whether it's the veterans with skills that they bring from

their experience or whether it's third-party certifications, this is the new environment for education, is that we honor what people can validate that they've done and help them move forward.

OK, any other final questions? Well, if we don't have any more questions, we'll just wrap it up. Any final comments from our presenters? Chris, anything to say?

[00:47:13]

CHRIS SIMPSON: No, I just want to thank you, Steve and Shawn, for all the support. Don't hesitate to reach out to us. We're happy to build partnerships, and we're also looking for grant opportunities. Like I mentioned, hands-on labs are a huge component of Cybersecurity programs, so we're always looking for new labs and partnerships to help reduce the cost and provide better hands-on training for our students.

STEVE WRIGHT: All right, thank you very much. I see another note is *"will there be another talk on this subject?"*

This is going to be recorded and put on our website. Also, in the very near future, we're going to be looking at having webinars on practice labs and the Net Lab Plus solution. Shawn, do you want to make a comment about those upcoming webinars?

[00:48:01]

SHAWN MONSEN: Yeah. So, the idea is that we're going to be talking about the virtualized lab environment and some of the options that we have in terms of the products that are available to us in terms of offering virtualized labs in the classroom. So, we have practice labs coming in to talk to us about their environment, and we have a representative from one of our regions coming in to talk about how they've deployed it in their region.

STEVE WRIGHT: All right. Well, thank you. Shawn has been managing our Net Lab user group for some time now. Community colleges have made big investments in that lab equipment. Some of them have a hub spoke arrangement with other colleges, so Net Lab is pretty well established. Some colleges are saying, "Gee, I don't really want to hop in on that bandwagon—I'd like to look

for something more cloud based on a per-seat basis,” so some practice labs now are emerging on the horizon. There are several more out there. We’re always platform agnostic (and transfer agnostic, too, as far as today’s meeting goes), so our job here is to bring you the information and let you decide and then host as many of the archives of who-said-what and PowerPoint presentations and the links on our website, so you have a continuing resource to go to as you look down this path.

All righty then, unless anybody else has a comment or a question, we’re going to say goodbye—and thank you very much!

Additional Resources

- Email [Bill Reed](#) or [Chris Simpson](#) to find out more about tuition discount
- Try out the credit transfer calculator at www.NU.edu
- Check out the [IT Readiness Inventory](#) checklist