ICT Educator Webinar Series

Cybersecurity Dual Enrollment at Cypress College

November 1, 2019

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Welcome

STEVE WRIGHT: Good morning, everybody. This is Steve Wright. Welcome to the ICT Educator Series. I'm the Statewide Director of the ICT (Information Communications Technology) team, and we encourage you to visit our website to see who our ten Regional Directors are and all the various material we have with our team, and see who some of these people are, like Nicole Sherman, who is our producer for this series—it's every Friday at 10 AM.

We provide this series as an open-access benefit to California Community College faculty, deans, decision makers, and any other educational or outside person that wants to sit in. It was developed to provide superior IT conference panel-type presentations without you having to go to a conference and spending all that money. All you have to do is register each week in advance, and we'll nudge you and remind you about the upcoming event.

Posted Webinars

IT/CYBERSECURITY FOCUS

- Cloudification of the IT Model Curriculum
- Using the Haiku Cyber Range for Cybersecurity Training
- 3 Ways Your Campus Can Offer Industry Certification Exams
- Cisco Update: A New Streamlined Certification Program
- Save Money on Certifications with CompTIA's Academy Partner Program
- Choosing the Right Cyber Activities for Your Campus
- Completing a 4-Year Degree in Cybersecurity Through the CA Community Colleges
- Digital Credentials in the California Community Colleges
- NETLAB+ User Group Webinars: Capture the Flag Competitions, Summer Cyber Camps
- Promoting Community College Programs Through Cyber Competitions
- How WASTC Training Helps ICT Educators Stay Current
- Virtual Labs: Practice Labs in the South Central Coast Region

STEVE WRIGHT: Now, the next slide here will show you some… These are some of the recent IT-related webinars that we have already recorded, then there are chapterized videos, so you can go to any part of the video, and then we have a transcript of the entire thing, plus the original presentation and any other links.

So, this is an excellent resource whether you're doing a grant or informing a classroom or having a conversation with your peers or whatever—these are some hot topics, and we keep this up for you on our website at any time.

Upcoming Webinars

- **November 8** – Exploring the ICT Disciplines: Which ICT Career is for You?
- **November 15** – BIW Dual Enrollment at Cerro Coso College

STEVE WRIGHT: Coming up in the next three weeks, we have Exploring ICT Disciplines. You know, it's just changing. There are so many different IT and Computer Science-related disciplines. It used to be you would just do a general approach, and you would be fine, but the technology just continues to subdivide and subdivide and subdivide, so we'll talk a little bit about that.

And then we'll be talking about the Business Information Worker dual enrollment and how that benefits people transitioning from high school. I think we're still deciding on the presentation for November 22, but there will be one.

Webinar Presenters

HENRY HUA   STEPHANIE TEER

STEVE WRIGHT: Today, we have Henry Hua and Stephanie Teer to talk to us about Cybersecurity dual enrollment pathways at Cypress College. We're really excited to hear about this because the

dual enrollment feature is one of the best to bring people in—you know, outreach. Let's hear more about that from Henry and Stephanie. We'll release the screen and turn it over to you guys.

Background on Dual Enrollment at Cypress College

HENRY HUA: Thank you, Steve. We appreciate you bringing us together, and we're really excited about doing that. As Steve said, my name is Henry Hua. I'm the Dean of Business and CIS here at Cypress College, and we have our Director of Dual Enrollment.

[00:02:33]

STEPHANIE TEER: Hi, my name is Stephanie Teer.

[00:02:36]

HENRY HUA: So, we were asked to kind of talk to the group about how we started with Cybersecurity and, actually, how we started with dual enrollment. So, this actually started as an endeavor for our campus about two-and-a-half years ago, when dual enrollment was just beginning to kind of pick up some speed. We were looking around at different areas which give us both a living wage and also were in a high demand. So, we started to, in January 2017, kind of begin our trek.

Once again, we had started this endeavor in the spring of 2017, and we started to talk to our high school partners, which in this case was Anaheim High School District, and they had shown an interest in developing the technology side of the house, here in dual enrollment, so we started that discussion.

Dual Enrollment Partners

[00:03:37]

HENRY HUA: Before we get into the history, we kind of wanted to show you some of our dual enrollment partners that we have currently. So, I'm going to allow Stephanie Teer to kind of go over our current structure that we have in dual enrollment in our partnerships.

[00:03:58]

STEPHANIE TEER: So, yeah, this has been quite a ride in terms of expanding our Cybersecurity partners. Cybersecurity is actually our flagship program. Just to show you how it's grown, these are some of our partnerships with some of the districts that we work with.

STEPHANIE TEER: We work with four different districts now. They are all, in some form... We offer one specific area at one of the campuses, but for the other campuses, we've got what we call our Cyber Saturday Academy so that all of those campuses can participate in it.

Dual Enrollment Snapshot

- Enrollments: 3,824
- Unduplicated Students: 2,098
- FTES: 343.8

Student Success

- 92.2% Success Rate
- 37 Cypress College Cybersecurity Certificates
- 127 Industrial Certificates
- 401 Eligible Students for Dual Enrollment Graduation Sash* *(5 units or more)

Enrollments by Year

- 2016-17: 193 (9 FTES)
- 2017-18: 1,295 (113 FTES)
- 2018-19: 2,336 (180 FTES)
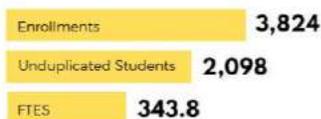
STEPHANIE TEER: So, here is a snapshot, just to show you the growth once we were able to… This is all of our dual enrollment aspects. So, it will kind of show you where we started. We started with about 197 students across the board. Half of those students were in Cybersecurity, but in the last two years, we've had almost 4,000 enrollments, and we've seen the growth.

But if you take a look, real quick, at the 127 certificates—that little icon there—since that time, our students have earned 127 industry certificates within the core courses that we've been offering. We're going to show you that pathway as well.
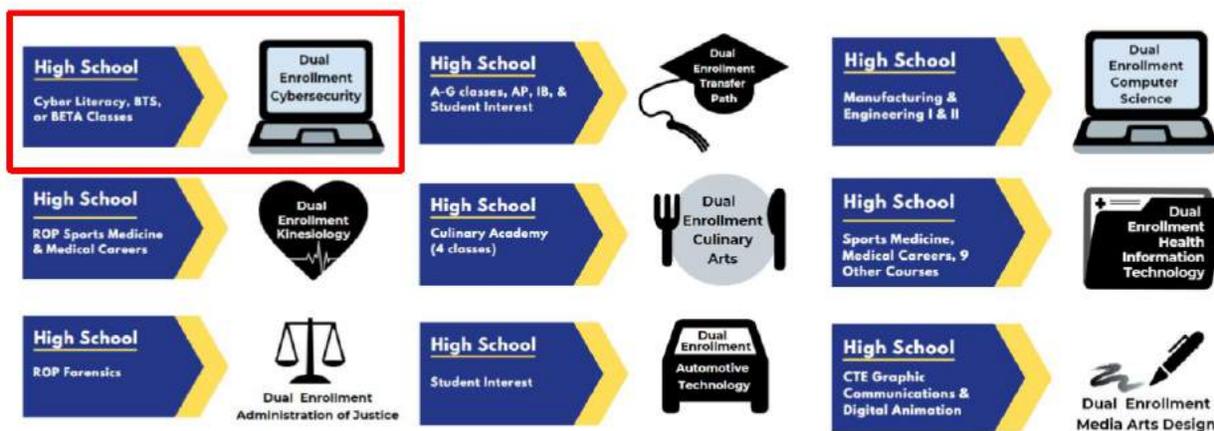
STEPHANIE TEER: So, if we look at our next slide, what we do is we focus on going into the high schools first, and we look at what CTE programs they've already got built in. With Cyber, we'll look at those that are already focusing on Cyber Literacy or that they want to focus as Cyber as their pathway. So, that's what we've done. We do it in all the areas, but that's what we've done there,

and then we start looking at the middle schools and elementary schools and kind of work, so we can start creating that pipeline of students that are going to be coming into dual enrollment Cybersecurity classes. So, a little bit about the next slide, which is the CyberPatriot program...

CyberPatriot Program

National Youth Cyber Defense Competition (4 Rounds)   **Working with Windows, Linux, and Cisco devices**   **Finding vulnerabilities and hardening systems**

[00:06:03]

HENRY HUA: So, this actually started off as a CyberPatriot Cisco Academy, and we started off with about 30 students in the spring of 2017. Our goal was to try to invigorate the younger students into understanding that the fun part of CyberPatriot is it has a career path that's attached to it. So, from that standpoint, we did our first Summer Bridge that turned out to be Summer Connect, here at Cypress College, where students that were participating in CyberPatriot would get an opportunity to start taking Cyber-related coursework at the college level.

So, as you can see here, we have a CyberPatriot competition that goes for 4 rounds. It starts usually in about October and goes into mid-February—if we're lucky enough, it goes into March and April, where students are going into the national rounds.

Those topics that have been discussed are Windows, Linux, Cisco, and a lot of it has to do with finding vulnerability, hardening the systems, and students have a lot of opportunities to make friends, to kind of talk to each other, meeting industry pros to help them in this area. So, we

developed the mentoring baseline of students from the college and at our 4-year institutional partners to come back and work with these kids, in addition to our professors at Cypress College.

So, this actually helped us a lot in developing this pathway and ensuring students had an engagement factor that they could join and spend a lot of their Saturdays every month training. So, in addition to the training that we do on campus here, we also do weekly training or biweekly training, depending on the site, at the site, and it turned into an afterschool type of program/afterschool activity. But there are coaches that are both at the site and also at our mentors to make sure that students understand this is a full-support service around their experience and not just an afterschool kind of daycare type of program. We wanted to make sure that students understood the value of learning Cyber hygiene and Cybersecurity and moving forward into a career path that they enjoy.

Guided Dual Enrollment Cybersecurity Academy

LEVEL 1 COURSES

CIS 190 C Cybersecurity Competition Fundatmentals

CIS 230 C Cisco Networking 1

DESIGNATED A NATIONAL CENTER OF ACADEMIC EXCELLENCE IN CYBER DEFERENCE. By the National Security Agency and the US department of Homeland security

LEVEL 2 COURSES

CIS 195 C Network Security — 1

CIS 196 C Ethical Hacking — 2

CIS 247 C Python Programming — 3

OPTIONAL COURSES

COUN 145 Job Readiness Career Management

Anaheim's *Innovative Mentoring Experience*

HENRY HUA: So, going into our next slide, we have the way that we do guided pathways, here in Cybersecurity, so it gives you an understanding of the course sequences that we offer and how we get them into the career path. So, I'm going to let Stephanie talk about the guided pathway model, and then we'll go over each course specifically.

[00:08:54]

STEPHANIE TEER: So, from a dual enrollment perspective, what we're trying to do is really engage those students right at the freshman and sophomore level where they're starting through that pipeline, as Henry said, in CyberPatriot.

So, we start with some career explorations at the beginning, but as we know, as the kids start to go into more of a guided pathway, what area they like, if they're interested in Cyber, if they like working with technology, but they just seem to be exposed to it a little bit more, we start with the foundational-level courses for them.

So, in our CIS 190 course with the Cybersecurity Competition Fundamentals, they get to participate in some of that aspect, and it kind of connects to some of the knowledge that some of the kids are already bringing.

We also start with the foundational Cisco Networking 1 class because those foundational skills, we know they're going to be useful as they start going into their Network Security, Ethical Hacking, and Python Programming classes.

Cybersecurity Academy Courses

[00:09:52]

HENRY HUA: So, as you can see, we have one Level 2 course where, foundationally, Networking is the foundation of the internet, so if no computer was ever connected, then Cybersecurity really is a nonissue. But because all of our computers are connected, understanding a baseline of network fundamentals is extremely, extremely important. And then we get into Level 2 much more depth into the different tools that are available and also now give them exposure to Python and programming and how that works best.

As a student learns about Cybersecurity—and not just the GUI interface of Cybersecurity but most of the security problems that are happening in code that may not be as protected as we would like it to be, or following the standards that we would like it to be… So, we start getting students exposure to programming, which is the innermost depths of where Cyber problems really happen.

Now, with that, as you can see, we have an optional course for Job Readiness. Once again, after these five courses, students now have an opportunity to get into entry-level jobs because of the experience that they have. Not only are we trying to get them job ready, but we're trying to get them industry ready so that they have the knowledge to talk the talk but also walk the walk.

So, the way that we do that is we partner with our industry certification partners, primarily CompTIA and Cisco, to kind of give them that feather on their cap, where they understand not

only do they have the coursework through the college, but they have now been able to pass the industry-level examination, and I'm going to give a quick shout-out to our Director of ICT here in Orange County, Steve Lithicum—he's been a huge proponent in helping us establish a certification within the coursework that we have, so much so that now we've revamped some of the work that we're doing to incorporate things like Cloud. We're doing Cloud Essentials, we're doing IT Fundamentals, we're doing Network+, PenTest+, all of which are CompTIA industry-recognized certificates, and now we're bringing in the DoD to kind of validate those certifications to make sure that it meets their needs.

Then lastly, what we're trying to do here at Cypress is develop our badging that goes with the student in addition to the certification. So, it kind of gives us a comprehensive portfolio for the student, both in a course curricular standpoint and also in the job readiness standpoint.

As you can see on the bottom right, we partner with our high school district in a program called AIME—it's Anaheim Innovation Mentoring Experience. So, students get to go all over Orange County to develop a stronger foothold of their knowledge base and actually putting it into action. So, we have partners like Disney, Kaiser, I mean, there are a lot of partnerships that we've done with the Cybersecurity space that have given the students the hands-on experiences that they would never have gotten had they not come to our dual enrollment program.

CAE2Y Designation

[00:13:21]

HENRY HUA: So, most recently, once again, as we moved into this space of Cybersecurity, Dr. Izadi who was the primary faculty member teaching our program, had come to us to say, "Hey, you know what? We really want to get a CAE2Y designation," because it was something that was sought after. We had tried in the past but hadn't really quite gone over the hump, so we designated 2018 as the year that we wanted to do that. We had a good 2017 spring and fall semester—it was building up to the momentum for us applying in 2018, which we did, and

successfully enough, we were given the CAE, which is a Center for Academic Excellence in 2-year colleges, by NSA and DHS in August of 2018, so we're very, very proud of that.

And now, as a CAE2Y school, we are now helping other community colleges build their infrastructure and also share best practices so that we can all benefit from having Cyber awareness.

Cyber Mentors

[00:14:29]

HENRY HUA: Here are some pictures that we want to share with the group as to the students that we were working with. In 2018/2019, we started to actually work all the way down to our 6th-grade students. We brought in all four of our elementary school districts—Centralia, Savannah, Cypress, and Anaheim—to bring them all together in hopes that they see the value of Cybersecurity early enough where they're able to move forward and be excited at the 7th and 8th grade levels.

So, we started working with 6th graders—you can see here we started to do a lot more engagement with our Cyber Mentors, and our students have been in the 6th grade, and then we added them to our 7th and 8th grade, all the way up to 12th grade. So, now you see a trajectory of students all the way from 6th grade, where they have a relationship with us, all the way through
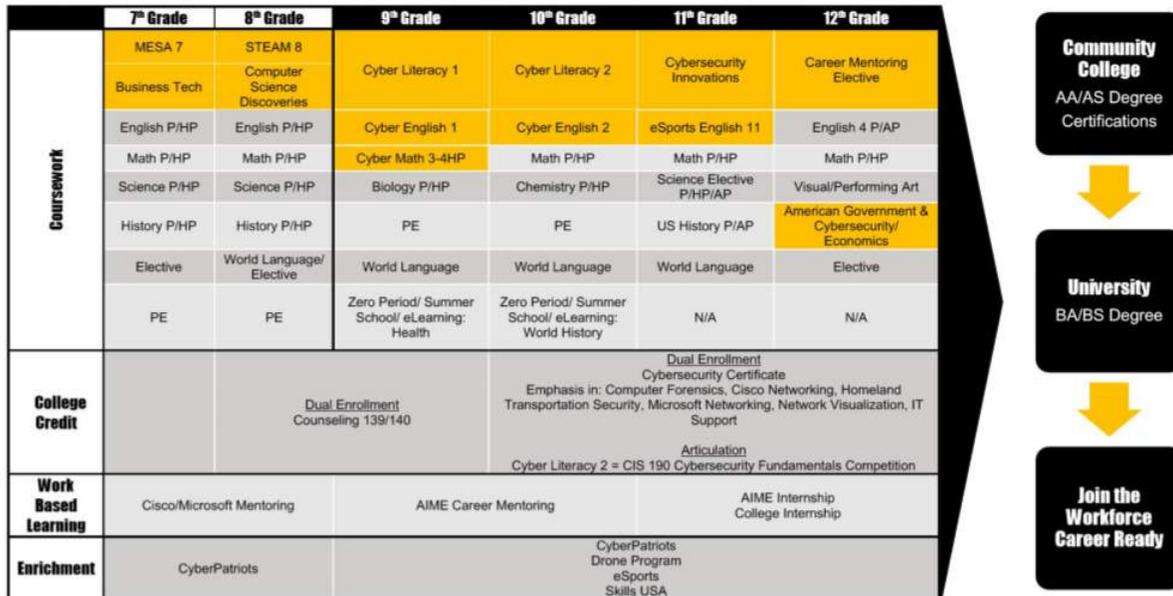
the 12th grade. So, that's a 6-year commitment that we made to Cyber in hopes that students find this field a career versus just a job.

Cybersecurity Institute

Can a student be **college ready**, earn the **Seal of Biliteracy**, and **complete a pathway**?

YES! In fact, the completion of **ALL** three helps a student be better prepared for higher education **AND** more competitive for scholarships and in college admissions.

	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade	12th Grade
Coursework	MESA 7 / Business Tech	STEAM 8 / Computer Science Discoveries	Cyber Literacy 1	Cyber Literacy 2	Cybersecurity Innovations	Career Mentoring Elective
	English P/HP	English P/HP	Cyber English 1	Cyber English 2	eSports English 11	English 4 P/AP
	Math P/HP	Math P/HP	Cyber Math 3-4HP	Math P/HP	Math P/HP	Math P/HP
	Science P/HP	Science P/HP	Biology P/HP	Chemistry P/HP	Science Elective P/HP/AP	Visual/Performing Art
	History P/HP	History P/HP	PE	PE	US History P/AP	American Government & Cybersecurity/Economics
	Elective	World Language/Elective	World Language	World Language	World Language	Elective
	PE	PE	Zero Period/Summer School/eLearning: Health	Zero Period/Summer School/eLearning: World History	N/A	N/A
College Credit		Dual Enrollment Counseling 139/140		Dual Enrollment Cybersecurity Certificate Emphasis in: Computer Forensics, Cisco Networking, Homeland Transportation Security, Microsoft Networking, Network Visualization, IT Support — Articulation Cyber Literacy 2 = CIS 190 Cybersecurity Fundamentals Competition		
Work Based Learning	Cisco/Microsoft Mentoring		AIME Career Mentoring		AIME Internship / College Internship	
Enrichment	CyberPatriots		CyberPatriots / Drone Program / eSports / Skills USA			

Community College AA/AS Degree Certifications →
University BA/BS Degree →
Join the Workforce Career Ready

HENRY HUA: So, I'm going to allow Stephanie to talk to us about what that success has gotten us. We recently applied for a Chancellor's Office CCAP STEM grant that has built the successes that we've had over the last two years. So, we're going to go over some of the work that we do with Anaheim exclusively, now with our junior high and middle school partners at Dale and Magnolia High School.

[00:16:11]

STEPHANIE TEER: OK, so Magnolia High School is designated there as a 'Signature Pathway' or CTE and to draw students into their high school as Cybersecurity. Because of the success that they've had with us in just having students sign up for their dual enrollment courses.

So, if you take a look at this, this is not actually our chart—this is the collaboration between the high school and the college, kind of coordinating how they're creating their 6-year plan with

their students that are starting in 7th grade all the way to 12th grade. So, this is the main pathway they found in terms of how to coordinate this together.

Students would go into the Cyber Literacy classes and also integrate Cyber Literacy into their math classes, into their English classes, and get the students a very strong foundation. The faculty work with our faculty as well, so we have our Cyber Mentors going into the high schools, where the dual enrollment courses are being offered out there. So, at this point, because the faculty have also created and worked together with the curriculum so that we can articulate that first class that we call our CS190, that Cybersecurity Competition Fundamentals class… It's an articulated class that now, actually, the high school teaches, and it's an articulation course that we give them credit for so that, by the time the students come here, we can start them into another foundational course, which is the Cisco Networking class.

[00:17:44]

HENRY HUA: So, one of the things that we found very, very important here was the contextualized learning that's embedded into the high school curriculum. This was a 2-year process. They were constantly revamping the way that we bring the content into their normal coursework. All these courses are A-G approved, meaning that they're not losing any eligibility by taking a Cybersecurity course or taking what's considered a CTE-related course, and that's an important component to program development, is the students having to choose whether they wanted to be part of our program because it's CTE related, and they say, "Hey, you know what? If I take this, I can be UC eligible." That's nowhere in our program development… We made sure to enhance the student's experience versus deterring. So, that was one of the things that we're constantly trying to build into it, as you can see. Our next piece is to try to build in physics and mathematics into a contextualized version, and the more we can bring the students into the career paths through their normal classwork gives the students that much more engagement.

[00:18:54]

STEPHANIE TEER: So, the next slide shows some statistics in terms of this is when we started a couple of years ago, and it was kind of that pathway... It shows some of our students there and then some of the certificates some of the students have earned. So, over 672 students have taken Cyber courses with us. Because of that success... Let me go back a little bit.

Also, Anaheim as a district, to show the collaboration and the value that they place on this program, add a dual enrollment program, which is in our college and career agreement. They also designated that they pay for all of the industry certificates for their students because we realized that we are looking at underrepresented students that are gaining exposure to a field that is brand new to them, their families, so we wanted to create all the opportunities that, if they were taking the courses and gaining the skills, they also had the opportunities [inaudible 00:19:59]. That's a really important piece.

[00:20:01]

HENRY HUA: So, that financial barrier was a huge component where we started to plateau our dual enrollment. As many understand, when we spin out a CCAP contract, the two entities have to agree on who is going to pay for what, who is going to collect for what, what responsibility is given to which entities.

18

And luckily for us, because of our strong relationship with our K-12 partners, which includes not just Anaheim but also includes Garden Grove, Fullerton, and Los Alamitos, there were guidelines that we followed to ensure that everyone is in a win-win situation. So, students are winning, the school district is winning, and the college campus is winning.

And that's how this was able to be accomplished, because we had those sit-down conversations with all of the participants to ask how can we make student success our #1 priority? What is it that we need to do to ensure that our students do not have barriers—fiscal barriers or transportation barriers or things of that nature—that can deter a student from experiencing these opportunities, especially for underrepresented students. Those are big things that have to be discussed before any program is ever launched. Stephanie?

STEM Cybersecurity Grant

STEPHANIE TEER: Yeah. So, I think that later we'll talk about how dual enrollment also provides a support structure for them. Because of the success that we've had, going on to the next slide, that allowed us to really go into… We were awarded a STEM Cybersecurity Grant, where now this is Magnolia High School's new chart focused on a select number of students that now we are going to be moving a cohort of students, and we've already started that application and recruitment with 8th graders right now so that 8th graders will go into this program. Two cohorts will move into this very select, premium program. They'll be in different courses together. They will stay as a cohort together, but we will be adding 16 new students every year.

CS3²

JUNIOR HIGH		MAGNOLIA HIGH SCHOOL				CYPRESS COLLEGE
7TH GRADE	8TH GRADE	9TH GRADE	10TH GRADE	11TH GRADE	12TH GRADE	60 UNITS
BUSINESS TECHNOLOGY	STEAM OR COMPUTER COURSE	CYBER LITERACY 1	CYBER LITERACY 2 (CIS 190 ARTICULATION)	CYBER INNOVATIONS	CYBER MENTORING	COMPLETE THE CYBERSECURITY PROGRAM/PACE (PATHWAY TO ADVANCEMENT IN CYBERSECURITY EDUCATION) AND EARN ADDITIONAL CERTIFICATIONS TO BEGIN AN ENTRY LEVEL POSITION AFTER OBTAINING AN AA DEGREE OR TRANSFER TO A 4-YEAR UNIVERSITY TO COMPLETE BACHELOR'S DEGREE
	WORLD LANGUAGE 1	CYBER ENGLISH 1 (HONORS AND COLLEGE PREP)	CYBER ENGLISH 2 (HONORS AND COLLEGE PREP)	COLLEGE WRITING PREP (ENGL 060C)	COLLEGE WRITING (ENG 100C)	
	COMPLETE HEALTH COURSE OVER 8TH TO 9TH GRADE SUMMER (ONLINE OR IN CLASS)	CYBER MATH 3/4	CYBER MATH 4/5	CYBER PRE-CAL	CYBER CALCULUS	
		WORLD LANGUAGE 2		AIME PROGRAM (INTERNSHIP)	CYBER GOVERNMENT	20+ UNITS IN HS
DUAL ENROLLMENT		CHARGER COUNSELING COMPUTER INFORMATION SYSTEMS CISCO NETWORKING		PYTHON & ADVANCED PYTHON NETWORK SECURITY ETHICAL HACKING SECURITY		5 CERTIFICATIONS ITF+ NETWORK+ C++ SECURITY+ CySA+

HENRY HUA: So, people are wondering what CS3^2 stands for, so I'm going to go over that really quickly. CS stands for Computer Science and/or Cybersecurity. As you know, Cybersecurity is always within the realm of Computer Science, depending on which area you want to get into— that's the squared. The 3 stands for completing a degree or job placement within 3 years. If you look at the average student that gets a master's degree in Computer Science, it ranges anywhere between 4 and 6 years. Unfortunately, as we moved our students from a community college level, it took them even longer than that, as long as 7 years, before students get their degree.

So, with that in mind, we applied for the CCAP STEM grant in order to enhance and actually make that experience shorter, not just with degrees but also with jobs. So, we started on that process last year, and we were lucky enough to receive the funding of $1.7 million as one of the six regional programs through the work that we've done over the last two years.

And as you can see here, while we developed pathways all the way from 7th grade, all the way through 12th grade, it holds up—they understand that this is a comprehensive program that will stay with them over six years.

As Stephanie said, we started off with a cohort of students in 8th grade. We had, astonishingly, over 100 applicants across the district that wanted to apply for these 60 spots. So, you know from the 60 spots, we are now having to guarantee either admission into a four-year university or into job placement.

We're really excited about how we're going to be able to do that. Students will start off on a track, as you saw previously from the Level 1 and Level 2, and then they branch off into either Computer Science or into Cybersecurity, so we have transfer institutions that will give them advanced placement into their colleges, both UCI and Cal State Fullerton, and a lot that has to do with some of the work that that we've done in the past on our Promise Programs with our district. Stephanie, do you want to talk a little bit about the promise/pledge?

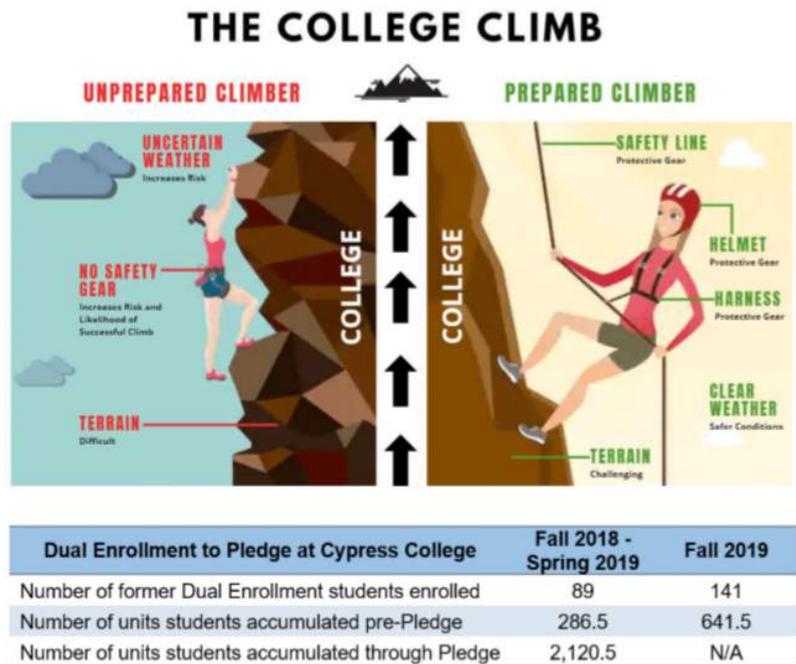# The College Climb Promise Program

[00:24:45]

STEPHANIE TEER: Yes. So, with our Promise Program, our students get the opportunity to attend tuition free for the first year here. That is really our goal: to get students prepared and enroll in dual enrollment.

DUAL ENROLLMENT STUDENTS THAT HAVE TRANSITIONED INTO CYPRESS COLLEGE

- Increased the number of students
- Increased the number of Dual Enrollment courses
- Increased level of college preparedness

THE COLLEGE CLIMB

Dual Enrollment to Pledge at Cypress College	Fall 2018 - Spring 2019	Fall 2019
Number of former Dual Enrollment students enrolled	89	141
Number of units students accumulated pre-Pledge	286.5	641.5
Number of units students accumulated through Pledge	2,120.5	N/A

STEPHANIE TEER: And what we've seen with students is that… When we go out and promote Cybersecurity, we look at two different students. So, we have students that want to get into career as soon as possible, and they want to find how to get those industry certificates so that they can get going and moving. We also look at students that want to maybe go on to four-year campuses, get degrees in Computer Science or Cybersecurity. And the way we promote our Cybersecurity dual enrollment pathway is, while they're in college and going towards a four-year degree, this is something that they're already prepared in, they have a background in, and they can begin working in that industry and start their networking and their internships early on with the skill level that we're giving them.

So, this is what we call our College Climb—this is what this slide is talking about. It's making sure our students are even more prepared when they decide to go to whatever campus they choose to. Whether they choose to pursue more Cybersecurity courses here and get more certificates here or they choose to go into a four-year degree, what we've seen in the past is… At the bottom, you'll see that… This is from our Anaheim campus—this is the number of students that transition, and you'll see that the number of students that transitioned the first year, we had about 89 students, and they accumulated over 286 units. But the next semester, in the fall, we had over 141 students and almost doubled/2 ½ times of enrollment units taken while they were in high school, which meant that they had taken the courses and were more prepared as well.

That's the whole focus of dual enrollment—while we're offering these pathways and exposing them to this industry, we're also making sure that they're very prepared as they come through the program.

Cyber Defense Certificate
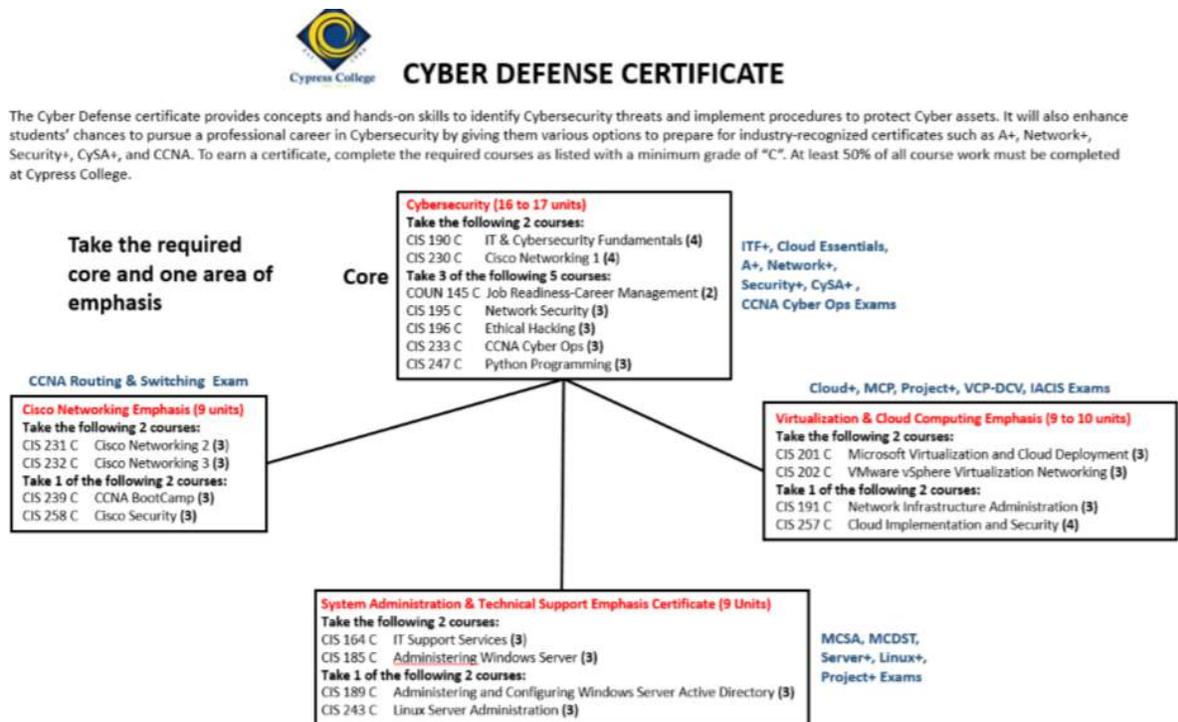
[00:26:38]

STEPHANIE TEER: On our next slide, you'll see that, even once they get here, they've got different pathways that they can branch out into. Henry, I know you'll get that.

[00:27:08]

HENRY HUA: Yeah, as you can see here, this is more of a pictorial representation of program enhancements. Everybody in our program has to take the core, as you can see at the top (the Cybersecurity core), and then, from there, they can branch off into more concentrations, depending on the area of interest that they have. We have Virtualization, we have Cisco Academy, and then also the Systems Administration Technical Emphasis. Those are three major areas that we're getting into.

As I said before, our main focus right now is primarily going to be Cyber and Computer Science. We are in the process of hiring a Computer Science instructor in addition to the instructor that we currently have. That area is being discussed with our four-year universities to make sure that the career paths that we're developing in Computer Science meet the needs of industry, so we are constantly talking to industry representatives.

I actually just came back earlier this morning with a group of CEOs in Orange County about how we keep our talent pools here in Orange County and how we as educators develop that relationship with them early on enough so that they feel the want and the need to stay in an area that has invested so much into them as people. So, that has been a very, very vital discussion both at the community college level and also at our four-year universities that are our partners. So, that's been something that we've been working on over the last year and a half to develop what that pathway looks like and ensure that we have a talent pool that is vital to the existence of our region. We've been spending a lot of time on that.

We're going to go ahead and show you a quick video…

Cyber Security Pathway - Cypress College Dual Enrollment

How Dual Enrollment Works

[00:34:47]

HENRY HUA: All right, so I'm going to have Stephanie go over this next part with you in terms of how dual enrollment works. I know we're a little bit short on time—we're going to try to do it as quickly as possible, so we can try to answer more questions.

[00:35:01]

STEPHANIE TEER: So, as you've seen in the video, there are a lot of players involved in helping students in the support structure. A really big part of my focus as the Dual Enrollment Director is to make sure the students get the support that they need when working with our counselors, our faculty, and making sure that we help promote and expose the students.

Adjunct College Counselors (Educational Plans)

College Transitional Leader (General Support)

Registration Workshops & Troubleshooting

Faculty & high school counselor communication with college counselor (student alerts)

Senior Graduation Sashes

Industrial & College Certificates

Orientations for students, parents, & faculty

STEPHANIE TEER: So, our next slide (and kind of our last slide) kind of just shows you that it takes a lot of people to put this together, and probably the most important thing is to make sure that you have the resources in creating these Cyber education programs because, not only is the accounting piece important, but it's also to make sure that we have those faculty champions on both sides—both at the college institution and the high school institution.

As you saw in the video, the collegian is really our champion at Magnolia High School and is moving things forward with us, but we work very closely with our administrators as well. So, it's been a great program—like I said, the students get so much out of it. We're very proud of the success that we've found, and we're proud of our students and all of the partners that have helped us.

Questions

STEPHANIE TEER: From there, we're going to go to our last slide, which is kind of just our questions slide, but you're going to see how our students are wearing their Cypress College Dual Enrollment sashes. Graduation is really special for a lot of our seniors, but we also want to make sure that they understand how important their journey was here with us as well, and we want to recognize that as well.

[00:36:43]

HENRY HUA: All right, so we tried to finish to give us time for questions. It's a lot of information, but as you can hear from Stephanie, it's a very collaborative process. It requires a lot of communication at every level to ensure the student gets the right experience and also that you have faculty and teacher champions out there that really want to do this for their kids and their students.

We are fortunate enough to have very loving faculty in this area. Dr. Ben Izadi, like I said, has been a huge factor in our success, as well as Dr. Penn Wu who is our programming faculty member. So, from that standpoint, we've been fortunate enough to have really good relationships.

[00:37:35]

STEVE WRIGHT: Well, I've got to say thank you, Henry, and thank you, Stephanie. That was a phenomenal presentation there. You know, sometimes when I watch these things, especially when I see the kids learning and kind of thing, I have little goosebumps moments, so I developed a scale from 1 to 5—this was a 4+ on the goosebumps scale. I couldn't contain myself.

So much of what you're doing and what you've integrated into your program in working with your high schools is stuff that we've heard about, that we advocate for, and we wonder how we can put together a toolkit or whatever. How can we get more colleges and K-12s to work together in this kind of way? And I'm so grateful that you were able to come together and share this with us today, and of course, we'll have this recording up, and we'll have a link to the video, which probably plays a little bit cleaner when you just click on it directly. We'll have a transcript and any other materials you want to share.

I think I have two questions for you…

The first one is our cost versus metrics issue. You've got a great program. Anybody can anecdotally see that it's working, but in order to convince government or other people or replicate it anywhere else, you've pretty much got to show 'this is how much it costs, and these are the kinds of results we're getting.' Are you able to formulate any kind of cost-benefit algorithms or anything from what you're doing?

[00:39:05]

HENRY HUA: Yeah. So, one of the things when we started, when Stephanie and I sat down and talked about dual enrollment, our goal was to have dual enrollment and the programs that we have within dual enrollment to be self-sustaining. So, this is one of those programs that we feel has the opportunity to be self-sustaining because of some of the courses that we created where

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students are enrolling to create FTEs, and then also the partnerships that we built through industry that are helping with some of those industry-recognized certifications.

Like I said, we were fortunate enough to work with Steve Linthicum, who was able to obtain some Strong Workforce funding regionally to help with the first certificate, but we were also very fortunate to have a fiscal partner in our Anaheim Union School District to take on the cost of their certification of students in this area. So, we are working collectively together to get industry partners to be willing to subsidize that cost so that all our students can take certifications and not worry about that fiscal barrier.

And as you can see with AIME, it's a kind of framework that allows us to have and see the value of the student in a work environment and why they want to invest in these students. So, we got a lot of positive feedback as to 'yes, we want to donate funds to have these students be able to take these exams because then we now have a ready-to-go employee, if they choose to work with us, to come into our environment and work their first day running, versus needing to train them, getting them tested.' So, they see the value of this kind of pathway long journey that the student has taken where we've taken out a lot of the onus of the student success, and we bring them a complete package of a student ready to go.

[00:41:08]

STEVE WRIGHT: No, this is incredible. By the way, we're going to take a longer look at AIME, later on. I'm very impressed with what they've done as part of your program, and if that's a replicable model, we'd like to look at that, but that may be another subject.

I'd like to kind of address a question to everybody else who has been watching here—what do you need to know from Henry and Stephanie, if you wanted to implement some or part of what they're doing? The whole goal of this program here is to introduce solutions that are replicable, so others can do it.

Those of you who are out there, what do you need to know? I mean, how would you do what they did? Or are you already doing it?

[00:41:52]

HENRY HUA: So, one of the things that I would tell you is we were very fortunate, and we ran this program starting in 2017. Our first year, we didn't have any funding—the only funding we had was Perkins, and it was actually a very small amount of Perkins that was already allocated to us to do CyberPatriot.

So, the following year, because we were able to replicate some of the work without a lot of funding, we applied for our own local Strong Workforce funding of $200,000 over two years. From there, we were able to ramp up and also sustain the growth of our program—so much so that now we are at capacity, not because we don't have the student interest, but because we don't have the physical space to hold the students and because faculty has so much load that they can do where we're kind of stuff. We're now constantly bringing on new faculty members to help with this. We just met with two gentlemen from the DoD that want to help the DHS because they heard of the success that we've gotten. So, the seed that was planted from the initial $200,000 has now grown to a forest of available individuals and also available funding.

I can't explain more than enough that without the initial investment of $200,000, we would not have been able to grow to this magnitude, and now, because we've grown, we're able to go after a number of different other funding sources. As you heard earlier, we got the $1.7 million from the Chancellor's Office, but we also, at the same time, got an NSF grant and have now been written into a number of four-year university grants because of the success that we show and the data behind the work that we're doing, how our students are being successful.

We have a 91.3% success rate in our dual enrollment overall, across our campus. We will offer over 41 different courses in addition to—how many sections do we do?

HENRY HUA: Yeah, 45 distinct classes but over 300 sections. We're not hearing you anymore, Steve.

[00:44:16]

STEVE WRIGHT: Lisa Lewenberg in the chat section asks a pretty good question that ties to what we're talking about—you're talking about money. Whenever I think money, I think, 'OK, is that for individuals that are going to be doing work, or is that for materials, equipment, or whatever?' And she asked the question, "I'm curious who all was involved in sitting down and mapping/aligning the programs. Junior high? High school? College? Teachers? Faculty? Counselors? What was the group activity like?" And of course, I'm going to tag onto that—who paid for what?

[00:44:45]

HENRY HUA: So, in terms of the meetings, before we had funding, it was more of a voluntary basis of who attended, and you saw Jamie. We actually have a group of seven teachers at a high school level. Jamie is just the Computer Business Systems Technology teacher, but there is Michael Dervish, who teaches the same thing but at the younger level, and then there is an English teacher and a math teacher all of which came because they believed in the vision of what we were doing.

Now, because they came before to kind of talk on what the curriculum looks like, we are now, with the funding we have, able to pay them as professional experts to kind of enhance and continue that work, but the initial work was done, actually, voluntarily due to some of the discussions that we had.

[00:45:40]

STEPHANIE TEER: But I want to go back to where you were asking who was all involved in aligning the program, and I think it starts at your campus. I think you have to align the campus first. You have to focus on who your faculty are that are going to be your champions in working with high school students—that's a big plus—making sure that those in front of you are academic senate so that they feel that the instructional division is on board with this and they feel this is going to be part of their new campus culture. That's where, I think, the beginning starts first.

Once everybody is on board, you've mapped out your pathway, you know which direction you want to go, then it does also now take another team, which is my team, that comes in for the education, the parent orientations, the education on how to become a college student, the

registration, the application, the counselors, to then now say maybe one on one or in a group the students need a little bit more help and understanding. In regards to your promotion and recruitment—and not only just the promotion and recruitment but the continued communication. Once your students are in that class, we don't leave them alone. We make sure that our counselors and our faculty are in constant communication, so if somebody starts to fall through the cracks, we either catch them or move them in a different direction. Not every student will feel that this is the best fit, so we want to make sure that we're capturing them to figure out how we can move them forward.

But I would give yourself time to really plan it correctly, but as a campus, I think you have to have a very solid foundation of what you want to do and what course everybody is going to be committed to as faculty.

[00:47:27]

HENRY HUA: I will tell you I can't echo enough what Stephanie is talking about in terms of a campus integration. When we first started this, we wanted to, number one, hear the history of dual enrollment and the different programs that participated in the past. Understanding the history and what it is that you're getting into is vital—that's number one.

Making sure that your academic senate and your faculty partners are aware of the work that you're doing and being transparent in that discussion is absolutely vital to the success of this program. We really feel that the reason we're able to be successful is our faculty are absolutely engaged and see the value of the work that we do. We have a steering committee that is faculty driven and co-chaired by Stephanie Teer and a faculty member.

Once again, we try to put everything together into one large pie, but it's very, very hard. I cannot tell you enough that the last slide where we have all the clubs, those clubs absolutely have to be connected, and everybody has to have those discussions—and I will tell you we had many difficult conversations with faculty, with people that had bad experiences with teachers that felt like we were going to take their jobs. I mean, the conversations were so in depth that the first six months of our program, even though we were recruiting, were very much sitting down and being

bombarded with 'hey, this is what happened in the past—I didn't like it, and I didn't do this, and we should have done that,' and just listening, just being available to hear what the concerns were so that people could feel that we are there to be a part of the conversation.

I think there was a question about minimum quals (qualifications). We follow only college minimum quals. All of our teachers that teach our courses are college-hired instructors. Now, that doesn't mean that a high school teacher can't apply for a position to be an adjunct with us, as long as they meet the minimum qual of the subject area that they're requesting to teach in.

So, we don't make any qualms about them coming over, but there also has to be an understanding that they can't teach when they are in class or their K-12 job, so that's one kind of caveat.

The other caveat is we need to make sure that the teacher understands this is not a high school class. This is a college-level class that they happen to be teaching, so we had some situations where we want to move the teacher from the site and move them somewhere else so that they can understand that this is not a high school class as specifically to our college students.

[00:50:31]

STEVE WRIGHT: Yeah.

JANINE DARWISH: Hello?

STEVE WRIGHT: Go ahead.

JINAN DARWICHE: This is Jinan Darwiche from Santa Monica College. If this was the Oscars, you guys should get an Oscar for everything that you've done in terms of dual enrollment high school/middle school—this is phenomenal.

My question is about jobs and internships for students, because beyond the coursework, students need hands-on experience—how did you initiate the contact with companies, and how responsive were they? What kind of companies are we talking about?

[00:51:08]

HENRY HUA: Absolutely. So, we range anywhere between mom-and-pop/small business companies to large corporations. And once again, it's about being out there. So, most of the time, Stephanie and I go out and meet a lot of different companies based on the grants that we have or contacts that we make.

Like I said, just today, just this morning at 7:00, I was at a breakfast of CEOs in Orange County, trying to build on the successes that we have and looking at making sure we had the right clubs with the right companies and developing those, strengthening relationships, and also representing the students that we have as well because we have a lot of underrepresented students for an HSI. And we want to have them understand that being an HSI means that we have a group of students really, really engaged in staying in the local area. How do we develop partnerships so that we can maximize what that means, what that means to their families, and what that means to us as a region?

So, we spend a lot of time meeting with CEOs, and we spend a lot of time meeting with HR, but I think, just like anything else, when people hear of success, they want to be a part of it, so that helps. Also, I will tell you that without the success that we've had, it's very hard to break down those walls, and Stephanie has been a great proponent of that—she spends a lot of time making sure people see the value of our kids.

[00:52:45]

STEPHANIE TEER: And I think that's the thing as well, that you've got to have that concentration of having somebody build those relationships… You know, the universities have that culture of they have somebody looking at companies, they have someone focusing on jobs and internships, and we don't do it as much at the community colleges, but we have to start taking on that role

and integrating that culture into our campuses because we don't really do that. Our campuses tend to be very focused on the transfer process.

But with these new CTE pathways, especially in Cybersecurity, we want these students to be working in that culture, but on my end, I have to make sure the success rate that students have at meeting the skill levels and understanding what they need to do and then have it prepared, which is… If you looked at one of the slides, we had that Counseling 145 class, which is our job readiness class, so now we make sure we not only prepare them for that coursework, but we prepare them for that internship as well, so we try to give them that focus, so we can integrate some of that professional development in there as well, just like four-year colleges and universities would do for their students.

[00:53:59]

HENRY HUA: One of the students we did not talk to was Anthony Gomez, and Anthony actually was our first… I call him our guinea pig because he was our first test student that we started working with. So, Anthony did two classes with us and then continued on, taking additional courses, and right now is a security analyst for Hulu. So, they spent a lot of time with Anthony, getting him there, getting him to kind of where he wants to be, and he's making $65,000 at 19. So, that's the amazing kind of work that we've done with students at different levels—

[00:54:40]

STEPHANIE TEER: And continuing education.

HENRY HUA: And continuing his education to get a bachelor's degree.

[00:54:45]

JINAN DARWICHE: That is fantastic—thank you so much. This is amazing. Congratulations!

STEVE WRIGHT: Maybe it's a follow-up to that last question, but I was wondering how, because it sounds like this was a program that the community is going to love and want their kids in it, and then it ends up being kind of restrictive or elitist. How do you keep the open-access quality going?

[00:55:06]

HENRY HUA: Actually, funny that you would mention that. As you can see, over the last year and a half, one of our biggest growth areas has been in our female population and making sure that underrepresented groups are seen. So, when we go through our application process, we want to make sure that we focus in on having much more economic inclusion and diverse student groups, so we've increased our exposure to that, and we're hoping to get more either funding or space in order to grow and not, like you said, keep people out.

We've been well enough where we're able to take on a lot of students because we have three tiers of the program. We have a tiered program of dual enrollment at each high school, we have a tiered program of dual enrollment exclusively to Magnolia, and then we have a tier of students that have a group of students coming here on Saturdays.

So, we had three tiers—even though they may take the same thing at different times, they have the same opportunities that we've given all of our students. So, from that standpoint, that's how we've been able to kind of keep that non-inclusiveness away, is that we tailor to the needs of the students a lot. Stephanie, maybe—

[00:56:29]

STEPHANIE TEER: Yeah, and I want to add to that that a lot of this takes a lot of parent education, especially for our underrepresented students, and that's where you need a really strong team from the dual enrollment side for when you're out there doing the promotion and the recruitment and counselors to work with those parents. We do a lot of presentations in English and Spanish. We're on their high school websites. We try to be where the parents are. We engage with the parent meetings. We're at back-to-school nights and open houses so that parents can understand

and students can understand, but there's a lot of education that takes place for students to understand what it is and that they can feel confident in seeing themselves in this industry.

[00:57:10]

STEVE WRIGHT: Well, I think this is great, and I love how much of the origins seem to be traced to the CyberPatriot program and some of these other things because the outreach and the fascination the kids have with learning Cybersecurity has been fun to watch.

[00:57:25]

HENRY HUA: Absolutely. Actually, thinking back on that real quick, Steve, this whole month we did Cybersecurity Awareness Month, so we spent each week with a different theme. Our first week was integration of Cybersecurity in accounting. The second week we had a capture the flag across our campus and across our region. The following week we had phishing and phishing scams.

So, this is a really campus-wide initiative to be inclusive versus being exclusive, and the thing that we're seeing from our community has been open arms. They're like, "How can we help, and how can we do this together?" Once again, I can't say enough how much the work that Stephanie Teer and her team has done to make sure that our Cybersecurity program has been enhanced year after year after year.

One of the questions was 'how do we duplicate this?' You would have to hire another Stephanie Teer or somehow replicate her.

[00:58:24]

STEVE WRIGHT: To that point, I don't know if this is possible or not, but I'm sure that your grant applications, in essence, are project plans. If they are something you could share, we could post it on our website along with this presentation, and people could look that over.

HENRY HUA: Absolutely.

STEVE WRIGHT: To the extent you're funded by Strong Workforce funds, maybe someone could take a copy of your plan and just change it to their region. This is where we can really help each other.

[00:58:47]

HENRY HUA: Yes. Whatever we can do to help, please let us know.

STEVE WRIGHT: All right, so I don't want to put you on the spot, but I'm putting you on the spot. Anyhow, we're just about out of time. It's 11:00—I don't know if there are any other urgent questions on this one, but like I said, it's being recorded, and it's going to be archived, broken up, and transcribed with the attachments of the presentation materials, so hopefully, any other project plans or things that you guys feel free to share will help other people replicate what you're doing. It's an incredible amount of work, Henry and Stephanie—thank you.

HENRY HUA: Thank you.

STEVE WRIGHT: All right, that wraps it up for today. Thank you, everybody, and see you next week!

HENRY HUA: All right, thank you.

STEPHANIE TEER: Thank you.