ICT Educator Webinar Series

Virtual Labs Update:

Practice Labs User Group Discussion

December 11, 2020

Contents

[00:00:00] Welcome

STEVE WRIGHT: Good morning, everybody. Welcome to the ICT Educator Webinar Series. I'm Steve Wright, Statewide Director for the ICT team of the Workforce and Economic Development of the California Community College system, which is always hard to get out at a cocktail party. Of course, I don't go to those anymore because of COVID, you know. These webinars are brought to you by our entire sector team, and they're produced by Nicole Sherman. Our guest speakers all volunteer their time for the sake of our students' success in our system.

I'd like to quickly remind you, at the beginning of the year, there's an excellent Winter Conference planned for the 7th and 8th. It's online. I think it costs $25, and this is just a sensational conference. I compare it to InterOp in Vegas for a fraction of the price. It's put on by Karen Stanton and Richard Grotegut, so sign up for that one.

On our website also, by the way, we now have over forty recorded webinars produced from you, our faculty, as well as successful how-to outsider subject matter experts. Each webinar is recorded, edited, chapterized, transcribed, along with the PowerPoint presentations for your later viewing use. With over 4,000 views to date, we hear from faculty what an excellent resource it is for classroom or grant writing and many other things.

Now, this is going to end our series for the fall, today's webinar, but we'll be back again in mid-January with a compelling lineup for next year. Today, however, it's going to be very interesting.

[00:01:37] Today's Agenda

STEVE WRIGHT: We have Paula Hodge and Susanne Mata, who are Regional Directors from South Central Coast and the Inland Empire, who are going to introduce faculty, and Practice Labs management, Jake Hoff, and the whole Practice Labs solution. They've helped encourage it in their regions, and we're going to hear today from faculty and others about best practices and its current features. So, with that, I'm going to turn it over to Susanne and Paula to introduce their panel and to manage us through these different presentations. Thank you.

[00:02:17] Choosing a Virtual Lab as a Service

SUSANNE: Good morning, everybody. This is Susanne Mata. I'm the Regional Director of Employer Engagement for the ICT and Digital Media sector in the Inland Empire. I'm looking forward to hearing from my faculty today from two of our colleges that have implemented and been using quite successfully the Practice Labs Virtual Lab platform.

We have funded this through a regional Strong Workforce project. We went through a process where we did a needs assessment, and we did compression planning, and we determined that a Virtual Lab platform would be very helpful in our region because we are so geographically large and spread out. We have a lot of remote areas, a lot of students that have access issues.

So, after a long process of figuring that out, then we went to selecting a vendor. And ultimately, after reviewing seven different vendors, our faculty selected Practice Labs. So, I'm excited to hear from our faculty today that are going to share their experience. Paula?

PAULA: Good morning, everyone. To what Susanne said, we did a similar thing back in 2017 or 2018 identifying that we wanted Virtual Labs to support students as far as 24/7 virtual access. And then, from a financial perspective, the costs with capital purchases and the limitations of onsite labs, we wanted to increase the functionality of our training or education in ICT.

I am pleased that, through this whole process that we began, we chose Practice Labs and that faculty and actually IT staff were a part of the whole analysis and decision making in selecting Practice Labs as our solution. We will hear from Ed Garcia today from Moorpark College, and the South Central Coast region is eight colleges in Northern L.A. County, Ventura County, Santa Barbara County, and San Luis Obispo County. So, this was definitely a regional effort, and I'm very pleased that you're here to listen about our journey and our solution.

[00:04:51] Faculty Showcase

SUSANNE: Thank you, Paula. And just to kind of piggyback on what Paula was saying, so we're the Inland Empire Desert region. We have two counties, Riverside and San Bernardino County, with six colleges in each of the two counties. And first up, we have Kasey Nguyen, who is faculty from Moreno Valley College.

[00:05:10] Moreno Valley College—Kasey Nguyen

KASEY NGUYEN: Hi, as Susanne was telling you, my name is Kasey Nguyen. I teach at Moreno Valley College. We started implementing the certificates under the Cybersecurity IT Technician pathways. So, under this certificate, we offer courses that relate to Security+, Ethical Hacking, Computer Forensics. And I also implemented Practice Labs for our noncredit courses, and our students in the noncredit courses actually took advantage of this to experience hands-on practice through the virtual environment, as you know that we went virtual since March.

And the experience has been pretty positive for all of us. Practice Labs has been very responsive on all my questions and the concerns. They had upgraded some of the virtual machines to make sure that it's adequate because we experienced some slow connection with one of the virtual machines, and they have changed that.

With the CompTIA A+-based courses, the students were able to obtain some of the exam prep along with all the other courses as well. So, Practice Labs has been a very useful tool for us. And with no extra cost to student, this project has been very beneficial for our college.

SUSANNE: Thank you so much, Kasey.

Moorpark College—Ed Garcia

Faculty Showcase:

Edmond Garcia

Professor ICT Moorpark College

Showcase using Practice Labs and LinkedIn Learning in Wireshark Course

SUSANNE: Now, we'll transition to Ed Garcia at Moorpark College, and he's going to really talk about the solutions not only using Practice Labs but also using other tools that we have in our toolkit, as we know that we, as we're teaching out there, or the faculty are teaching, they need various tools to get the message and the learning done with the students. So, Ed, I'm going to go ahead and hand this off to you.

ED GARCIA: So, my name is Ed Garcia. I teach at Moorpark College. I've been there for twenty years. And what I wanted to do today was share a little bit of how we use a variety of tools to really enhance the student experience. I mean, when us as faculty, what we really look at is, at the beginning of the semester, we design our course. We think about how the student experience is going to be.

And then, at the end of the semester, which is like right now, we look at, OK, what was the experience like for students? Did my Canvas course really take the student to an engaging experience? What was the student experience like? What things could I improve on? What were some of the challenges students had? The bottom line is, when you look at your gradebook, how many students successfully completed the course? I mean, that's really what we're after, right? Our success rates. So, I'm going to address that at the end of my presentation, because I think it's important to keep that in mind.

covers TCP/IP protocols and introduces use of Wireshark

Note: 18 week term

Tool Name	Task/Description	Student
Canvas LMS	Learning Mgmt System: Student Assignments with Due Dates	Navigates LMS
	23 Chapter Quizzes 23 Student Writeups on Chapter Midterms/Final	
Safari O'Reilly - Ebook	TCP/IP Ebook – Covers 23 Chapters on TCP/IP	Summarizes and submits Write-up
LinkedIn Learning WireShark 2 hours course	Provides Live pre-recorded Videos/Lessons by Lisa Bock on using Wireshark with specific tasks. Watch videos and replicate on Local Desktop	Watches Labs and Duplicates on Local Desktop
PracticeLabs.com 6 Wireshark specific PracticeLabs	Provides Hands-On Labs to Wireshark based activities to be performed remotely. Student uses Remote Desktop and Wireshark to complete 8 Labs 1-hour labs.	Reads PDF and completes Remote Labs on Practice-Labs
LIL Digital Certificate of Completion for Resume	Students receive Digital Certificate of completion after completing LIL	Uploads to Resume

So, what are the courses? So, this is a typical strategy. What I'm showing you here on this eighteen-week semester, and what I'm showing you here is I use a Canvas LMS—that's the learning management system. We're all familiar with that. It's got assignments, due dates—nothing new there.

Also, what's different for us, as a lot of our campuses are now moving towards, is zero-cost textbooks, right? We all want to lower the cost for students, reduce as many barriers as possible. So, we use Safari O'Reilly. Now, Safari O'Reilly—let me show you that…

Hour 18. Web Services

What You'll Learn in This Hour:

• Content management systems

• Peer-to-peer networking

• Web services

• XML

• SOAP

• WSDL

• REST

• Web transactions

The technologies of the Web have led to a revolution in software development. The simple Web server, which, as you learned in the preceding hour, is actually an HTTP server, forms the foundation for a wonderland of applications and services made available through the elegant web browser interface. This hour describes some of the web applications you interact with every day, such as content management systems, wikis, and blogs. You'll also learn about the powerful Web service architecture, which

Safari O'Reilly has a huge database of courses. So, that's purchased through our library. I would strongly encourage you to look at your library to see if they will subsidize that. I think we paid… On our campus, our library has all these free articles and stuff that they purchase every year, and they use very little of it. In my opinion, this was a very worthwhile investment for our campus,

because now our entire campus has access to a technical library, and now I can pull books from there.

For this particular course, I'm using a TCPIP protocols book. It's twenty-three chapters, and it covers all of the key elements. It's a one-hour chapter. Typically, it takes about an hour to go through that one chapter, and we cover all twenty-four chapters in the eighteen-week semester. So, we use a free ebook. I've got the textbook issue resolved using Safari O'Reilly. That was the first challenge for this course.

The second challenge was, OK, so I've got a book—what about the actual activities the students are going to be using? So, we're using LinkedIn Learning for that. I found a really good course on LinkedIn Learning that has a lot of demonstrations, a lot of video. It has some quiz questions. So, it's a LinkedIn Learning type of video experience, and I found this course by Lisa Bock. She walks the students through LinkedIn Learning course. Let me show you what that looks like.
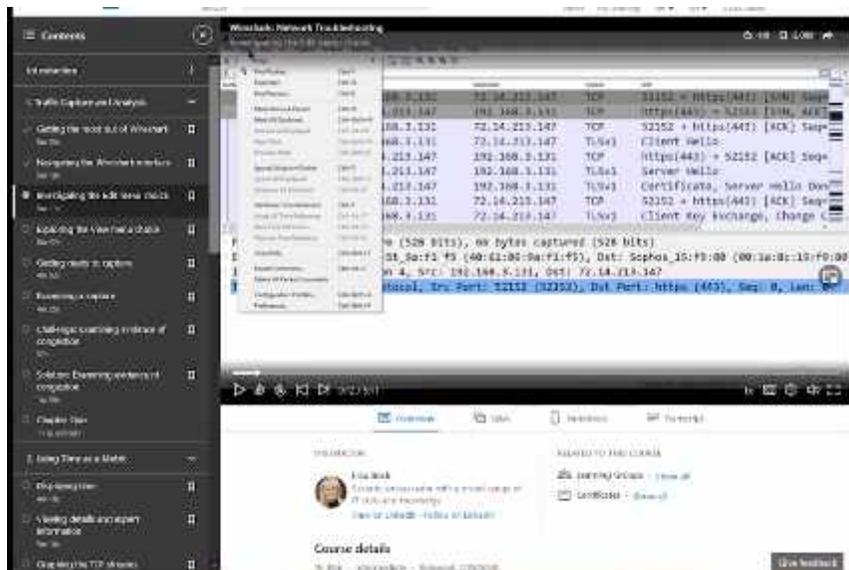
So, in the LinkedIn Learning course, it's walking the very basics of Wireshark, for example. It's walking through how to do protocol analysis, how to do the display filters, the capture filters. It's content, and it's very, very well done, but the entire course takes probably about three hours. So, what I do through the entire semester, students are doing fifteen minutes a week of the course.

So, they get to a certain point, and the I integrate a quiz through my LMS, where I'm asking them questions about what they just learned through the LinkedIn Learning course, so there's that integration. So, students now are watching the video, and then they actually do the exercises on their local computer, so they're running Wireshark on their local computer. So, now I'm addressing

the hands-on learning locally on their local computer, so that builds that confidence and that experience using their local computer. That's the second component.

And then now that's the meat of today's topic, is the Practice Labs. So, now, as you know, with COVID in particular, what's happening is I've had to install Adobe and some other resources on my computer. Well, I can't have access to our Moorpark College campus, so what is the IT staff doing? What the IT staff at Moorpark College is doing, they're doing remote access. They're remotely accessing my computer, and they're installing software. They're doing remote maintenance.

We also have a huge internship program on our campus. And guess what—students go to a facility. These IT students from my program, they go to a facility, and they're actually connecting to their clients remotely. So, what's happening in our marketplace and the IT environment, a lot more remote management, remote maintenance, remote tech support is happening, and we're going to see an increase in that. So, all the more reason for developing the confidence in students to be able to troubleshoot problems when the equipment is not right in front of them, but it's actually located somewhere else, remotely. That's where Practice Labs really plays a significant role in establishing that confidence.

So, let me show you what my Practice Labs looks like. So, in Practice Labs, students can access a huge catalog of a variety of courses, kind of like NETLAB, where they have all these different courses. And the one that we're using… We use Practice Labs for our Security+, Network+, Linux+, Cisco CCNA, and all these additional courses, and then we were able to find a TCPIP Wireshark course.

So, as you can see here… Let me zoom in here a little bit. You see all the different course offerings. There's stuff on databases, content on programming, Java script, Word, Ethical Hacker, Security Literacy—just a variety of content. Well, we found a Wireshark course that has worked out well for us.

In the Wireshark course, they actually do not six but eight specific labs. Each lab takes about an hour to complete. So, when they access Practice Labs and they log into the portal, there's a PDF document that walks them through step by step on how to complete the lab. Let me show you my course…
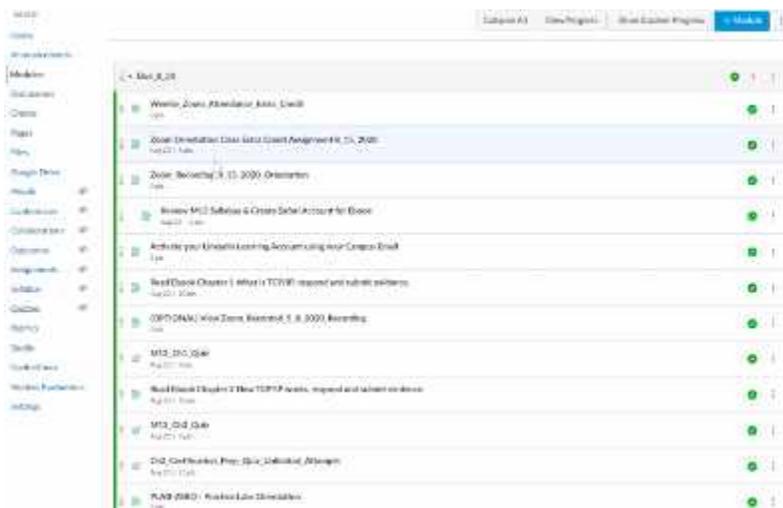
So, here's my course now. In my course, I have monthly assignments where they have to read a chapter, do the quiz, do the LinkedIn Learning, watch a LinkedIn Learning module, and then do an actual Practice Labs. The course has monthly due dates, so everything is due at the end of the month, pretty much, as opposed to weekly, because of COVID, so that's worked out fairly well.

And as you can see, there's a lot of quizzes. There's a chapter quiz that they're constantly taking. There's a weekly LinkedIn Learning module that they have to complete. Each LinkedIn Learning module is about fifteen minutes per week, so I spaced out the LinkedIn Learning modules throughout the entire semester, and then they have a Practice Labs. So, by the time they're done… Let me go to my syllabus, show you my syllabus for this course.

	Traffic	
12/6	Read Chapter 21 Streaming and Casting	Submit Summary Response & Quiz
	Read Chapter 22 Living in the Cloud	Submit Summary Response & Quiz
	PracticeLab #7 – Analyzing Protocols	Do Lab
	LIL Finish Wireshark Essentials	Watch Video, upload Certificate of Completion to Canvas for Extra Points.
12/13	PracticeLab #8 – Packet Sniffing with Wireshark	Do Lab
	Read Chapter 23 Internet of Things	Submit Summary Response & Quiz
12/16	Submit M13_PRACTICE FINAL	
12/16	Submit REAL M13_Final Exam	Submit thru Canvas for grading

PracticeLab #1 – Understand Common Ports and Protocols
PracticeLab #2 – Installing Wireshark
PracticeLab #3 - Wireshark Functionality
PracticeLab #4 – Customizing Wireshark
PracticeLab #5 – Working with Captured Traffic
PracticeLab #6 – Analyzing Captured Traffic
PracticeLab #7 – Analyzing Protocols
PracticeLab #8 – Packet Sniffing with Wireshark

Midterm Exams are to be completed by due date unless pre-approved by instructor. If

So, they actually complete… So, I've got the O'Reilly book that I mentioned. I mention which LinkedIn Learning course they're going to be completing, and then, here at the bottom, it's got the weekly due dates, all the assignments. And at the very end, I mention they've got these eight labs that they're going to be completing in Practice Labs. Let me go back to my document here, and let me scroll, so I can show you.

Sams Teach Yourself TCP/IP in 24 Hours
by Joe Casad
Published by Sams, 2017

About This E-Book (01:09 mins)

Title Page (01:09 mins)

Copyright Page (02:18 mins)

Contents at a glance (01:09 mins)

Contents (04:36 mins)

Part I: TCP/IP Basics (01:09 mins)

- HOUR 1: What Is TCP/IP? (23:00 mins)
- HOUR 2: How TCP/IP Works (19:33 mins)

Part II: The TCP/IP Protocol System (01:09 mins)

So, you're seeing the Canvas assignments that they're going to be completing, and then I mentioned the ebook that they're going to be using, with twenty-four chapters. Approximately, each chapter takes about an hour a week to read.

Student 1

In this hour I learned about the Application Layer. In the OSI Model the Application Layer consists of Application, Presentation, and Session. The Application layer provides services for user applications and support for the network access. Presentation translates data, handles encryption, and data compression. Session manages communication connectivity and name recognition along with security. There are different network services that the application layer provides. File services operate data storage on hard drives enabling read or write permissions on documents, Printing services operate printers and print documents. name resolution maps IP addresses using DNS. Remote access is a collection that lets users initiate connections with other computers. Web services include HTTP, the heart of the World Wide Web. I also learned about API's which are some kind of Library providing an interface for the application layer and the different TCP/IP utilities like Ping, ipconfig, traceroute, netstat, ftp, and tftp.

And then here's my rubric. So, I explain what is expected for the chapter reading, and here's an example of an actual posting from a student, where they're telling me what they learned for that hour. That's one example. In this example, they're learning about ping, ipconfig, traceroute, netstat… So, they learn all about that in the ebook.

Student 2

The application layer is the layer at which local applications running on a host communicate with TCP and UDP network ports at the beginning of the transport layer. It facilitates network access for services, APIs and applications, translates data into a platform-agnostic format, and provides communication for functions not able to run on the transport layer. -File and print sharing, name resolution (mapping IP addresses to easily recognizable names), remote system control, HTTP (used for communicating with web servers and transporting data such as HTML formatted web pages), DHCP (dynamic allocation and assignment of IP addresses to hosts), FTP (client-server file transfer). Etc.-TCP/IP features a system that allows any machine connected to the internet to be uniquely identified, it can split networked data into segments, send those segments across a network in packets, and reassemble them at the receiving end. TCP/IP can also reassemble packets in the order in which they were meant to be sent, crucial on a network where lots of different pathways and variables are present. Packet format allows data sent over a

Here's another posting. So, students are writing back a report because, as you know in the industry, they've got to be able to communicate effectively about what they learned.

Application layer

In this chapter, I read about the application and its functions, services, and utilities. The application is the 7th layer in the TCP/ IP model and corresponds to the application, presentation, and session layer in the IOS model. Some network services it provides are file and printer services, name resolution, and allowing remote access from another computer in a different place. Also, it hosts vast useful utilities to troubleshoot some problems that you may encounter. Some are ifconfig for Linux/Unix is the same as config for windows as it displays TCP/Ip settings, ping test for network connection, arp contains physical address to IP address to IP address mappings. Traceroute traces the path of a datagram throughout the network. The application layer is where most users see how the process of transmitting information is seen.

Application		Application
		Presentation
		Session
Transport		
Internet		Lower OSI Layers
Network Access		
TCP/IP		OSI

Another posting… So, these are examples of students' postings that they do every week on what they learned in the course.

****************** LinkedIn Learning Modules ******************************

Course details

1h 30m · Intermediate · Released: 7/28/2020

Learn how to analyze network problems with Wireshark, a free, open-source packet analysis tool used by network administrators around the world. In this course, Lisa Bock demonstrates how to get the most out of Wireshark, so that you can better evaluate your network and keep traffic moving. You can discover how to use time as a metric for visualizing delays. In addition, you can get an introduction to some of the most helpful tools within Wireshark, such as TCP, I/O, and flow graphs. Finally, learn how to visualize transmission errors and recognize common attack signatures.

Learning objectives

- Exploring Wireshark capture options
- Analyzing a capture
- Using time as a metric
- Viewing conversations and endpoints
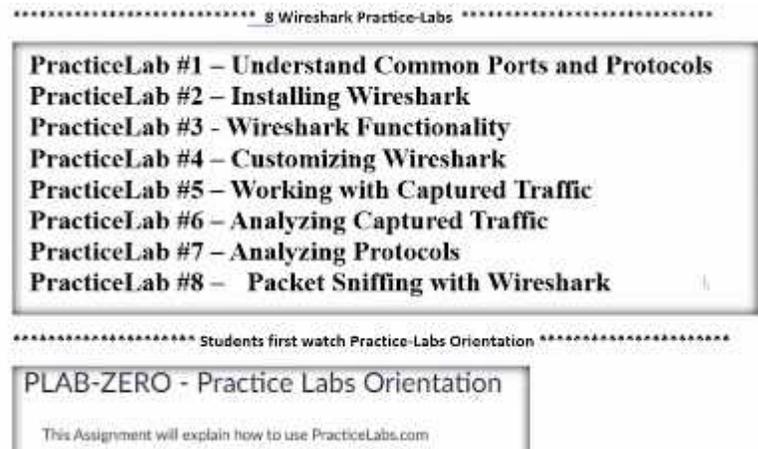- Creating flow and I/O graphs

Now I'm showing you the LinkedIn Learning module of what they're going to learn that week, and you saw the output screen of the actual LinkedIn Learning video, where they're actually doing Wireshark activities. And you see on the left the actually content, so they cover that week by week, maybe twenty minutes a week, on the LinkedIn Learning module.

Additional Wireshark Resources on LIL
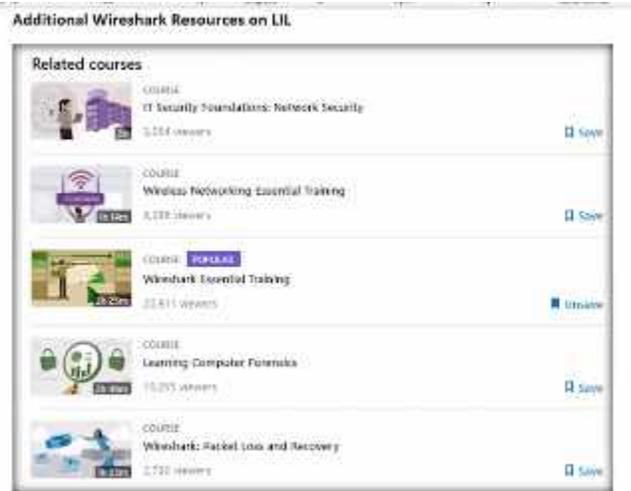
On LinkedIn Learning, they have additional courses that they can take. Again, there's a whole database of courses related to certification such as Wireshark, Network+, Security+, so that's worked out well.

*********************** 8 Wireshark Practice-Labs ***************************

PracticeLab #1 – Understand Common Ports and Protocols
PracticeLab #2 – Installing Wireshark
PracticeLab #3 - Wireshark Functionality
PracticeLab #4 – Customizing Wireshark
PracticeLab #5 – Working with Captured Traffic
PracticeLab #6 – Analyzing Captured Traffic
PracticeLab #7 – Analyzing Protocols
PracticeLab #8 –   Packet Sniffing with Wireshark

********************** Students first watch Practice-Labs Orientation **********************

PLAB-ZERO - Practice Labs Orientation

This Assignment will explain how to use PracticeLabs.com

And then, finally, they go through the remote lab configuration, the remote lab assignments. Now, Practice Labs does have… So, for each of my courses… Most of our courses at Moorpark that are aligned to certification, they have a respective course on Practice Labs.

So, what we do for each course, we have a Practice Labs orientation. What the Practice Labs orientation is, it's a course that is a module, if you will. The student spends half an hour on the module, and it's orienting you on how to use Practice Labs and how it works on its navigation and stuff like that.

Practice Labs Introduction to Wireshark
Please select a lab guide

The Introduction to Wireshark Practice Lab will provide you with the necessary platform to gain hands on skills in using Wireshark.

By completing the lab tasks, you will improve your practical skills in installing and customizing Wireshark, and using Wireshark to capture networking.

Lab Guides

- Understand Common Ports and Protocols : In progress
- Installing Wireshark : In progress
- Wireshark Functionality : In progress
- Customizing Wireshark : In progress
- Working with Captured Traffic : In progress
- Analyzing Captured Traffic : In progress
- Analyzing Protocols : In progress:
- Packet Sniffing with Wireshark : Complete

Each Lab has Multiple Exercises::

- Exercise 1 - Verifying Port 80 for HTTP
- Exercise 2 - Verifying HTTPS Port 443
- Exercise 3 - Verifying Port 139 for NetBIOS
- Exercise 4 - Contrast TCP and UDP Protocols

- Exercise 1 - Downloading and Installing Wireshark
- Exercise 1 - Packet Processing Explained
- Exercise 2 - GUI Interface Tour
- Exercise 3 - Import and Export Features

- Exercise 1 - Packet Marking and Timeframes
- Exercise 2 - Creating a Profile
- Exercise 3 - Editing Functionality

- Exercise 1 - Capturing Traffic
- Exercise 2 - Capture Filters
- Exercise 3 - Display Filters
- Exercise 4 - Colorizing Traffic

- Exercise 1 - GeoIP Mapping

OK, so here are the eight Practice Labs the students do remotely. From their home, they access the remote lab, and they go through these different Wireshark tools. So, they have to learn how to… And each one of these Practice Labs is broken up into exercises. So, for example, Lab 1 has four exercises. Lab 2 has three exercises, and so on and so forth, so they're broken up into mini modules.

*************************** Each Practice-Labs shows Topology ***************************

Introduction

Lab Diagram

Connecting to your lab

So, when the student first connects to Practice Labs, they're given a topology diagram. They've got to figure out how to navigate the online remote lab, which is critical. So, when I've gone out to industry and I see how industry is doing remote labs, how they remote to their customers, they actually have a topology layout of the customer's networking environment to make sure that they connect to the right resource and configure the correct equipment. So, again, it's reinforcing a lot of these skills that are common in the marketplace.
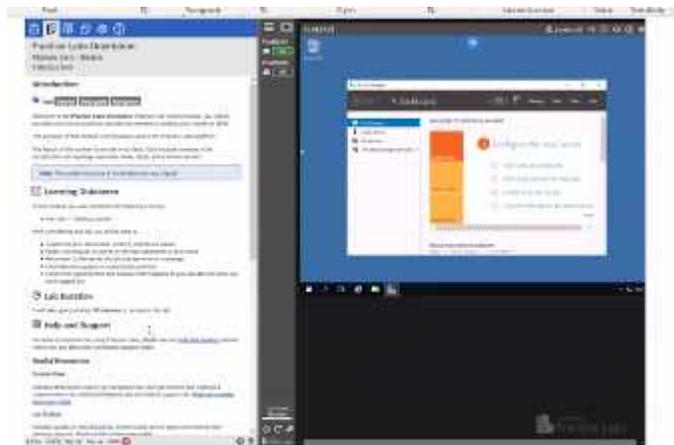
So, here's an example of Practice Labs where the student sees, using remote desktop, they finally get to the Wireshark icon, they launch it, and now they're running Wireshark remotely. So, here's a screen of the instructions on the left, where the student follows the instructions, and then the actual lab on the right.

Now, students could shrink the instructions on the left, and this what I advise them to do, and actually bring up a dual screen and have a PDF on the right with the lab instructions and then, on the other screen, have the actual lab where they have to do the work.

****************** Demo PDF File ******* Recommend Dual Screen w/PDF + Equipment Split*****

Analyzing Captured traffic.pdf

OK, so here's a screenshot of them doing a Packet Tracer Wireshark lab, so they're using Wireshark, and they're navigating. OK, and then they can see the… Let me launch the PDF.

Practice Labs Introduction to Wireshark

Analyzing Captured Traffic

- Introduction
- Exercise 1 - GeoIP Mapping
- Exercise 2 - Packet Jumping
- Exercise 3 - Statistics Menu
- Exercise 4 - Firewall ACL Rule Creation
- Summary

Introduction

The Analyzing Captured Traffic module provides you with the instructions and devices to develop your hands-on skills in the following topics.

So, this is the PDF that's walking them through step by step. So, they would have this open on one screen while they're completing the lab on another screen. So, it walks them through that. It walks the student through the lab completion.

OK, so here's the other piece. So, towards the end of the semester… This class finishes next week of being the end of the semester. So, already I have twenty-three students enrolled in the course. I already have twelve students that have already finished the LinkedIn Learning course. And what they get upon completion is a Certificate of Completion, so they get to add that to their resume.

They love that. They're surprised. "Hey, this is cool! I got a certificate out of it!" You know, they can put that on their resume. They feel more confident, and they start understanding that, when you finish a goal, usually there's a reward that follows. In this case, they're getting a Certificate of Completion, and here's the student saying, "Hey, this is cool! I didn't know this would be a certificate." And there's my response: "Of course! I told you Santa is for real." Kind of like Christmas humor. Anyways, students love it.


OK, so here's the key piece—success rates. COVID climate right now… As we know, students are having a really difficult time, so retention and success rates are critical. We all know that. Look at

the numbers! This is surprising. It's 96%, 98%, 94%... That's the amount of work that's completed by students. That's really, really, really high.

What is that telling me? It's telling me that my engagement components seem to be working pretty good. I think I'm probably going to end up, out of the twenty-three students, probably nineteen or twenty of them are going to pass the course very well, and I'm sure there are about two or three that have not done any of the work, one, because they're having challenges or whatever, and that's understandable. But that's a pretty good success rate.
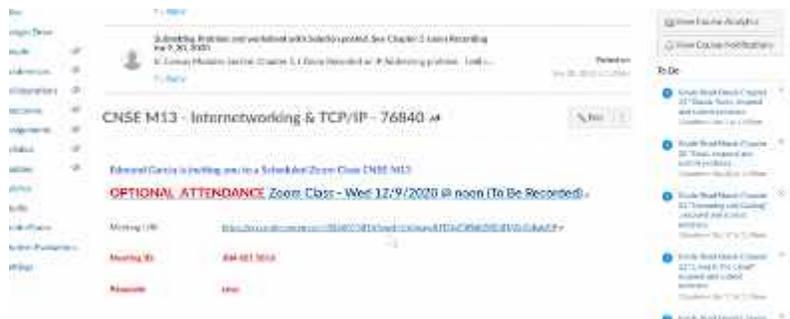
So, I think, if you look at the outcome, it kind of speaks for itself. This course is taught asynchronously. I have a meeting... So, let me go to the main homepage of my course. So, I have a weekly Zoom meeting. And at the weekly Zoom meeting, I cover a chapter, typically. I cover what's going on with the LinkedIn Learning. I cover the Practice Labs, whatever has to be covered, and then I address whatever issue the students may have. So, that's a weekly contact, and then I also have the recordings. So, there's a weekly recording.

PAULA: Thank you, Ed. We do have to move onto our next speaker, but it's very informative. I also want to mention that, for the South Central Coast Region, we've been using Practice Labs since 2018, so we've been able to really... In a way, it's matured for us and the integration, and Ed's just showing what an amazing opportunity using Practice Labs and other tools, building out your coursework and using Canvas...

Additionally, we also work with the high schools and what's feeding into these courses. So, there's so much opportunity, and Ed, this is amazing. And I know you shared the Word document, so we'll make sure we make this available as well. Susanne, the next presenter?

SUSANNE: Thank you, Paula. Yes, I'm happy to introduce one of my faculty from Chaffey College, David Nimri. David, take it away.

DAVID NIMRI: Thank you very much, Susanne. So, what I wanted to do was just kind of touch on a couple things that I've found that have worked really, really well for Practice Labs and why it's kind of a unique element in improving instruction for our students. What I'm going to touch on is, basically, how it's actually acting as a cost savings for our students, how it's actually able to save them money. Just the amazing instant catalog… There's no need for technical support, and it also even has an autograder of a sort.

So, it's a really, really good product. I'm kind of new to Practice Labs. I didn't know what it was. Susanne had led a bunch of us faculty to kind of evaluate everything that's out there. I mean, we looked at every single one of the major online or cloud-based lab environments. I mean, everything from NETLAB to uCertify to, obviously, Practice Labs. We looked at the entire gamut. And at the end, us faculty had a vote, and we predominantly voted for Practice Labs, because it combines a lot of really, really good stuff into a single package.

So, what I wanted to do was I wanted to share my screen, talk about a few stories, success stories, and how I utilize it, and how it can actually benefit your students and why we, as the greater regions of California, should really be focused on making this available to everybody. So,

let me go ahead and share my screen here. I'll kind of talk through several of my classes and how I utilize Practice Labs and why it's so great. So, can everybody see my Canvas course at the moment? OK, perfect.

So, this is our Virtualization and Cloud Computing course. So, what we did was we combined Virtualization and Cloud Computing because they're inherently related, so we kind of teach it into a single course.

And what we've done is I've actually taken Practice Labs, and, with their massive catalog, I was able to add all of the specific VMware labs that I want them to learn. So, I have our Virtualization Practice Labs.

And then, in addition, we have combined that set of assignments with our Cloud+ Practice Labs. Now, believe it or not, Practice Labs does have actual cloud-based learning, which students do spin up machines in the cloud. Specifically, it uses OpenStack. But either way, it's really, really good learning, and our students do get to practice virtualization and managing a cloud-based environment in this one class.

And I didn't have to pay anything for it. I didn't have to buy a specific secondary lab that comes with the book or anything. It's just go in, add what I wanted from this giant catalog, and my students go. And it's really, really great because it does have kind of an autograder. It's a percentage of how much of the specific lab did you complete autograder. So, I can see, hey, my students got 75% or 100% of the labs done, and it takes away my concern on whether or not my students are completing the labs.

You know, what I've done in… We've used the old NETLAB at Chaffey for a while, and what I had students do was submit screenshots of the last step that they did in NETLAB, for example. Well, do students do? They share, right? So, as a teacher, how do I make sure that this is truly one person's assignment and they're actually completing things? So, this allows me to track on a per-user basis on how much of the particular lab they completed, so it's actually really, really nice from that regard. It helps me ensure they're learning.

So, this is just one of my classes. I use it in many of my classes—in our ethical hacking class, in our cloud virtualization class, our programming classes even. It's got built-in labs that have a Python interpreter on the VMs, so I'm able to, basically, allow my students to practice on those, right? So, instead of having to, let's say, purchase the programming class book and also purchase, for example, an additional lab set, which we all know a lot of books, they say, "Hey, you can have these labs for extra money." My students don't have to pay for that, right? They get the basic print book, and I give them the Practice Labs, so saving my students my money, and I get to make sure that they're learning the appropriate material. So, I've found it really, really helpful on that.

So, here is one class. Here's another class. And you can tell, I mean, I'm giving my students tons and tons and tons of programming experience using Python because that is kind of our core-focused programming language, just because it's so powerful and useful. So, that is really, really good learning.

In addition, I noticed that the book publishers themselves are also using Practice Labs, so this was completely by accident. I don't think it was on purpose. I think I even emailed Susan, like, "Oh, my god, they're using the exact same thing." The book publisher engages using Practice Labs.

So, sometimes for some classes, as Ed had specified, there's so much learning that needs to be completed that you really have to kind of take things from different resources. So, for our Digital Forensics class, what I did was I said, "Hey, we're going to go ahead and purchase this set of labs with this book, and then I'm also going to add on the Practice Labs."

So, I went in here, and here it is from our CIS 65, our Digital Forensics class. I said, "OK, we're going to do a data acquisition lab, lab 3.1 from MindTap Cengage." So, I go ahead and I add it, and there it is. So, I go, "OK, we're going to go ahead and do this MindTap lab." I'm going to pull it up for my students. We'll give it a couple seconds it needs to complete it, start assignment.
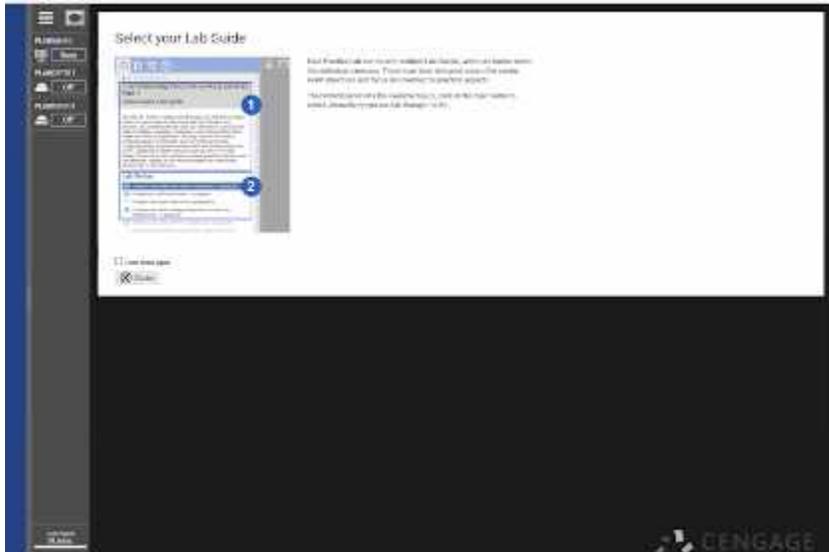
And then what you're going to see is a Practice Lab right there, available through Cengage. So, Cengage is the big book publisher that also uses Practice Labs. Now, I didn't know this at the time, so when I went ahead and went to the bookstore and ordered everything months ahead of time, I didn't know this. So, I linked the course, and I started everything, and I was like, "Hey, this looks really familiar," so I went ahead and I pulled up the Practice Lab that we got, and I added it. And sure enough, it was the exact same thing. So, I'm going to go ahead and pull it up here.
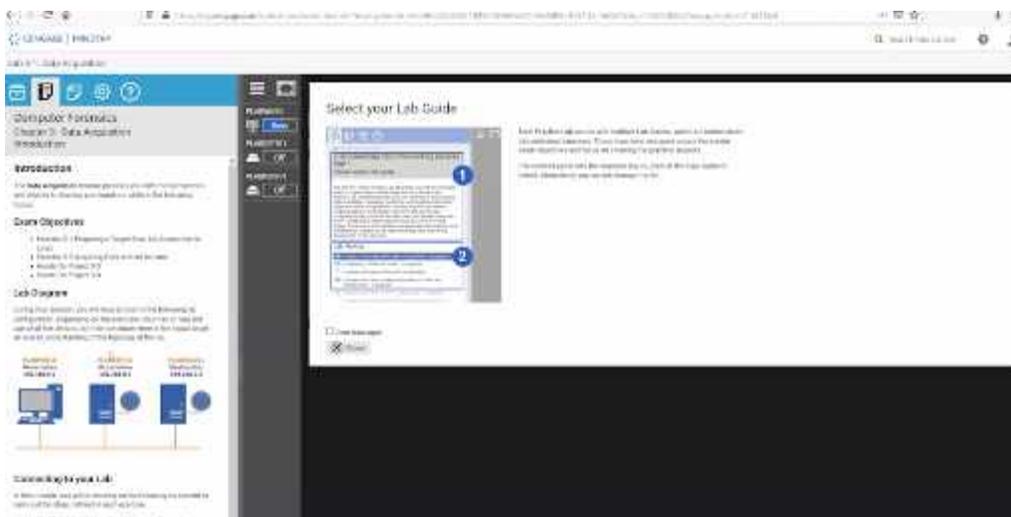
So, there's my workstations that you get, the three workstations for the forensics class, and if I pull it up through Practice Labs in our shell in Canvas, there it is. It's the exact same lab! The exact same lab. So, going forward, I'm just going to have my students get the cheap used print book for thirty bucks or whatever instead of having to pay for the full $119 MindTap Unlimited and just give them the Practice Labs info. So, right then and there, I just saved my students seventy or eight bucks, however the math works out. Just like that. So, now I'm like, "Ah, that was so cool!" and I remember I was so excited. Either way, that's really, really good stuff. As you can tell, you'll save your students lots of money.

Now, here's a success story that I just think will really kind of drive this home as to why I've become a fan of Practice Labs where previously I was not. I was just kind of agnostic. A student comes to me and she says, "Hey, Professor Nimri, I have an interview next week for a company that wants somebody that can assist with managing desktops, imagine, and a little bit of Windows networking in their environment."

And she said, "Hey, you know what? I took the Windows administration course and the networking class three years. You know, I went ahead, and I basically forgot it." She's a part-time student. I said, "No problem."

So, we have our own sort of sandbox environment that we get to play around with. I added her to my sandbox environment. I went into her Practice Labs, and just like that, I was able to pull up the Modern Desktop labs for her, I was able to add Desktop Infrastructure labs and Microsoft Networking labs in Practice Labs, the whole bundle, and I said, "Here you go."

And she went ahead, and she studied really, really hard for it, and she prepared for her real-life interview, and she's going to be successful because she got to reinforce those things that

she had done previously. And I was able to do that for her instantly. I mean, five minutes of my time, and she was good to go.

So, I'm going to show you just how easy it is to add a Practice Lab either for a class or for one of those one-off situations in which a student just needs a reinforcement or a student needs a little bit of help or they want to learn something instead of saying, "Hey, just go Google it. Watch this. I'm going to give you all the labs that you could possibly dream of."

So, I'm going to go ahead and create a new assignment, and I'm going to click on the plus sign, just like we all know… More options. At this point, I'm just going to say PL Test just for us, and now when it comes to time to add the assignment, just External Tool, click Find, and now I just scroll down to Practice Labs, click on it, and there's a little search button that comes up. And now I have the option of how to add and how many of the labs to add.

So, for example, I could do a single lab in Practice Labs, and I'm going to show you this giant catalog that I have to pick from for my students. I mean, that's a lot of good learning stuff, right? So, for example, for my students, if, let's say, they wanted to learn everything from something as simple as Excel 2016 or something more advanced, like Windows Server Administration on Windows 10, Networking Fundamentals, whatever it is I want, Managing Modern Desktops is the one for this student. But it's got really, really good stuff—Cybersecurity Fundamentals, for example, or Digital Literacy. Whatever I want. Ethical Hacking.

But I'll just go ahead and do the Modern Desktops. And now notice that I have all these really, really cool labs that my student can do. All kinds of labs available to them from managing profiles to… I mean, the whole thing is there. It's all available for our students almost instantly.

And if I click here and I click Confirm Lab, then my student has the option to start it, just like I showed you earlier. But let's say I wanted to give my student the option. I could totally go in here and just say Bundle, and at that point, I can give them an entire bundle. "Hey, I want you to do the entire VMware library—have fun."

Or if I wanted to, let's say, for a specific Practice Lab, if I wanted them to do any one that they choose from a subcategory… Like, all the Modern Desktops, you get to pick which ones you want. Then I can say the student selects which lab they want to do. And when they pull it up, they can say, "Hey, I want this lab." So, it's really great because, at that point, the user can select which module or which groups of modules they want to do. It's really, really helpful, and it's really, really simple.

So, let's just go ahead, for just the fun of things, and select one, and let's say we'll go ahead and do Installing and Configuring Windows 10. They do have more advanced stuff, obviously. And at this point, I'm going to have them do this one lab. Select, set a due date, and it's done. The student, when they pull it up under the appropriate assignment category, they just click on go, and it pulls up the VMs for them and the instructions. So, it's incredibly easy. It's incredibly awesome. And students can do whatever it is they want with it, so they can just turn on the machine and go to town. The machine will start turning on, and they can do whatever it is they want.

So, some of the benefits, obviously, is the huge savings. We have this instant catalog. As teachers, it really, really helps us help out our students. We don't have a tech, right? With the old NETLAB, you kind of have to have "Hey, can you guys please download these images?" or "Can you guys go to this website and get us this bundle?" or "Can you please go ahead and modify the servers to have this?" None of that is required. With Practice Labs, I can just go in and get the catalog.

And if you work with the Practice Labs folks, they can even give you a custom lab. They created a custom lab for me. So, it's really, really good stuff. We don't need to contact campus IT. They're busy enough, right? I just go ahead and do it myself, and it's just a really, really good product. So, that kind of covers it. Any questions for me?

SUSANNE: Thank you so much, David. I think, if we can go ahead, there are a couple questions in the chat, but we want to let Jake from Practice Labs do his presentation, so we'll keep track of those questions and, hopefully, we'll have a few minutes at the end. Chrissy, did you want to introduce our speaker?

[00:40:49] Practice Labs Update

CHRISSY: Yes, we have Jake Hoff. He is the head of U.S. growth with Practice Labs, and he has been our exceptional contact since we've been working with them.

JAKE: So, yeah, I appreciate the introduction, everybody, and I appreciate the opportunity to be here with you guys. Kasey, Ed, and David did a fantastic job at kind of explaining the Practice Labs environment, and I'm going to do my best. I'm on a time constraint. I'm going to do my best, so Paula and Susanne give me the Academy Awards treatment and shoo me off the stage.

So, a little bit about Practice Labs… Our company mission, it's really to help our users, customers, partners, and our crew to be better today than they were yesterday. And at the bottom-right corner of that slide, you'll see the crew values: challenge, respect, enjoy, reward. That's kind of our internal messaging, but if you see a posting on LinkedIn or such, I'll mention CREW quite a bit.

And really, my story behind that is I've known the owner of Practice Labs, Ricky Doyle, and I've known Ricky Doyle personally for quite a few years. And he required me to go through this CREW practice of on our onboarding, and I was like, "Man, you know me! Come on!" and he was like, "Nah, we have to make sure you fit."

So, now being with the company for the past few years, I understand why we do that, and the people that we have are completely bought into what we're doing and kind of being a good CREW member to everybody. So, Chrissy, if you can go to the next slide?

So, kind of where we come into play as far as your educational purposes… You know, we combine the great theoretical knowledge that you guys are giving them, the instructors, and we provide a platform to help apply that knowledge and develop the students' skills using real-world hardware and software.

Another benefit is a betting understanding of what they're learning to help improve exam results and to develop their practical skills that employers are looking for. It's kind of like a risk-free environment, a place where they can learn from their mistakes and really challenge themselves a little bit, too. I know that Ed, David, and Kasey kind of pointed out the content side of things, but there are some problem-solving skills that goes along with this.

I would say, on average, about roughly 50% of our support tickets that come through are by user fault. They're either not following the directions closely enough, they skipped a step, something along those lines. They're in an environment they can't break, so it's good for them to think outside the box a little bit and outside the context a little bit and say, "Hey, you know, what if I tried this?" So, this environment does allow them to do that.

And in the end, as it relates to the hands-on practice and marrying it with the theoretical knowledge, it's really about student success, and the hands-on knowledge definitely gives them that confidence and understanding of how to apply the skills that they've learned. Next, Chrissy.

[00:44:42] Making the Day-to-Day Easier in a Distance Learning World

- All-inclusive platform – content & devices on one screen
- OnDemand access – no need to reserve time
- Access to the latest live hardware and software, no simulations
- Broad range of IT topics covering fundamental, intermediate, and advanced levels
- Module-Zero – Orientation lab for functionality and navigation
- No hardware investment, all browser-based
- Canvas integration (managed through SynED)
  - As of December 3, 2020, Practice Labs is LTI Advantage Complete Certified by IMS Global Learning Consortium (LTI 1.3)
  - LTI 1.3 – quicker, easier, and more secure
  - Currently testing with Canvas

JAKE: So, how do we make the day-to-day life easier in the distance learning world? We've all been struggling with the COVID situation, learning from home. I've got three kids on Zoom class at the same time, all in different levels—high school, elementary school, etc.—and it's a challenge for each one of them. Some more than others.

But basically, what we do as it relates to your guys' courses, we provide an all-inclusive platform. What I mean by that is the content and the devices are all on one screen, and it's an on-demand access. There's no need to reserve time. It's available when the student needs it. So, when you're talking about an asynchronous class, they don't have to go into a scheduling platform to see if they can actually get in there, and it might be 11 o'clock at night. They can just pop in, go in, and start learning and brushing up on those skills, and it does provide them access to the latest hardware and software, and it's no simulations.

It's a broad range, as David, Kasey, and Ed had pointed out. The amount of topics that we cover is very broad from fundamental, intermediate, and advanced levels, and I know that Ed had hit on the Module Zero title that we have. I strongly recommend... So, if you guys are integrating

this into Canvas, I strongly recommend that you guys implement Module Zero. It has the tutorial to kind of get the student through the lab environment and help them understand. It's going to alleviate a lot of questions back to the instructor. I know it's cut down on support tickets quite a bit because it's an environment that people aren't used to, and if they have a really good tutorial, at the end of the day, they're not going to have the need to submit a support ticket to figure something out, and they won't have to reach out to the instructor for questions. So, it's an extremely valuable tool.

There's no hardware investment—it's all browser based. And then one thing that we're really proud of that happened just recently is we were certified as LTI Advantage Complete Certified by IMS Global Learning Consortium for LTI 1.3. We're currently doing some testing with Canvas right now with the help of some SynED folks, and we are making some pretty good progress there. And basically, what the LTI 1.3 brings—it's quicker, easier, and more secure. And I know that David brought up the ease of how to build those courses in Canvas. This is going to make it just that much easier.

[00:47:26] Where We Are Headed

- Vision Statement – Improve the digital skills of 1M learners by 2023 and help them gain employment or improve their career prospects. You're part of this vision.
- Areas of internal growth
    - Content development team
    - Platform development team
    - US-based technical support
    - UI & UX
    - Customer Care

JAKE: Kind of where we are headed… To the right there, our vision is to improve the digital skills of one million learners by 2023 and help them gain employment or improve their career prospects. You're part of this. The reason why we partner up in the academic space and the professional learning space is because we have that vision. We're well on our way, and we definitely need to work together, work with you guys, to get there.

And kind of one of the things I'll touch on, which is very exciting for us, is we're in the process of building a platform—it's an assessment platform. So, basically, skills, knowledgeability. And what it's going to allow the learner to do is kind of get an understanding and assess them on their knowledge but also apply that knowledge and assess what they just completed. So, we should have beta on that in the next couple of months, and we're excited to get that out there to kind of broaden our product a little bit.

The other thing that we're really excited about… As far as areas of our growth, we really have a strong focus on the content, platform, and our user experience. That's been something that we've had, I guess, some initiatives internally to really focus on those areas. And I'm not sure, and I wish she was on the call with me, but some of you folks may know the name, but Aima Rotella, she's been in the industry for a lot of years. She just started with us last week as head of production, so she's going to kind of bring all those initiatives together for us, and we're extremely excited about having her on board. You can go next, Chrissy.

CHRISSY: OK. I'm going to also tell you we're going to leave a little time for questions and answers, so I'm going to go to the next slide, but we're going to have to leave them wanting more.

JAKE: That's fine, that's fine. Yep. I'll quickly go through this stuff. And really, I don't need to go into the platform because David and Kasey did a really good job of kind of going through that a little bit.

[00:49:51] New Releases/Roadmap

JAKE: But some of our new releases—the broad Digital Literacy. This is a strong focus for us, and it's been very popular because, in the COVID world, digital skills are lacking in a lot of areas. And I know our main focus has always been IT/Cybersecurity, but really developing the digital skills of everybody, because that's where we're at now, and we need to focus on those folks that need the help.

Cybersecurity Fundamentals is a new release, and then we just released last week the new Security+ 601, along with some of the sandboxes we released. The Vulnerability Sandbox is probably the most popular, and you can see the lab topology at the bottom there for that.

Now, roadmap wise, this is the last thing I'll go through, Chrissy, and then we can wrap up. Roadmap wise, in Q1… So, we've been known for certification titles since day one. We're expanding our portfolio to some role-based labs. Not getting rid of certification titles. We're going to still focus on our core, but we really want to focus on role-based, work-ready content. So, in Q1, we're releasing a Network Engineer lab, a Linux Administrator lab, and then a Windows Server 2019: Administration Concepts lab.

And then also planned… And if Louie, one of our SMEs, was on here… He was so excited to present this to me, but also plans for Azure Administrator Fundamentals. So, a part of the problem we've always incurred with Azure and other call-based platforms is the student needs to create an Azure account. And they can—they can get a free trial for an account that's good for thirty days.

Now, we have come up with a solution where we provide access to the Azure lab environment, so there's no need for the student to create the account, no login necessary. It's autologin to the actual Azure platform. So, we're extremely excited about that, and that should be coming sometime in Q1, so stay tuned. Otherwise, I will wrap. The Academy Awards is saying done, like move! Thank you very much.

[00:52:06] Wrap-Up & Questions

STEVE WRIGHT: Wow! That's a lot! What I like about it is we got an entire day's worth of presentations into one hour, and that was pretty phenomenal. And yes, Jake, you did leave us wanting more. I mean, this is incredible. I've watch Practice Labs get introduced. I remember when Paula did some of the first footwork on that, and then it got rapidly expanded. Susanne picked it up out there, and I know there's been support from SynED and others. And then, Ed, to see what you've been doing, and David and Kasey. It's just phenomenal.

Meanwhile, we'll spend the last ten minutes we have—any burning questions? Have you guys had a chance to look through the chat? Is there anything that you're ready to answer right now?

KASEY: So, I'll answer Nancy's latest question regarding TestOut. So, I recently reached out to TestOut, and TestOut has been in communication with me for a while. I've used TestOut since the CD/DVD days. Back then, they would ship out a book along with the box that contains the CD and the DVD.

Yes, TestOut does have a lot of content in parallel with the examination for CompTIA and some of the other areas. The challenge that we see with TestOut is TestOut has limited content, so they only have… I just spoke with the rep recently for one of the grants that we wanted to use. There were only fifteen courses that were technically related. So, purely just IT, you don't have a lot of the other areas, like if you wanted to explore programming or some of the other things at Practice Labs, you won't have the access with TestOut.

However, you do have textbook content, and they would sell it as a bundle, so if you're looking at the student cost per license, a bundle costs higher, and we love that the students didn't have to pay any extra just to use Practice Labs through the regional license. So, that really helped my noncredit classes because the noncredit students are the students that couldn't afford to go to school regularly. They couldn't afford to buy some of the materials, so it definitely helped me in my noncredit classes and my credit classes, as we work in Inland Empire, and a lot of students couldn't afford materials for the class.

STEVE WRIGHT: I see a couple of questions here about getting initial account, a pilot account, or a testing account. Jake, can you speak to that? We have people on the call from the CSU system that would like to give it a try. What's the best way to go ahead and try this out?

JAKE: Yeah, so I think, Chrissy, you can correct me if I'm wrong—it might be best to kind of work through Chrissy, or you can reach out to me as well, but we'll definitely find ways to get the labs inside your hands and get you guys kind of familiar with them.

STEVE WRIGHT: And we don't require any kickbacks for that kind of referral or anything on that! Just kidding. This is great. This is how we get the word out. OK, anybody see any other questions that you can answer pretty quick?

CHRISSY: I put my email in the chat, so if anybody is interested, just go ahead and send me an email, and I will work to get you more information and get connected.

PAULA: And I know that since we are out of time, maybe we'll look through the chat and see if we can get some answers, and then have those answers associated with the posting of the webinar.

STEVE WRIGHT: OK, great. Yeah, we need to save the chat on this one. Once again, a cast of thousands here. Thank you, Jake, David, Ed, Kasey, Chrissy, Paula, and Susanne. This was very informative and a good way to end the year, with a very dynamic presentation on how we're helping our students. Thank you all very much. I'll see you in January.

CHRISSY: Thanks, everybody.

JAKE: Thank you.

KASEY: Take care, everybody.

SUSANNE: Bye-bye.