PATHWAYS FOR THE FUTURE
... EXPERIENCE WORKS
June 28-29, 2023

CYBERSECURITY PATHWAYS

VIRGINIA DEPARTMENT OF EDUCATION

SESSION INFORMATION

- Please put all questions in the Q&A
- Use "speaker view" for the best experience
- Mute your microphone during the session presentation
- All sessions are being recorded
- Complete the survey at the end of the session for PD points – please do not leave the Zoom

PATHWAYS FOR THE FUTURE

JUDITH SAMS

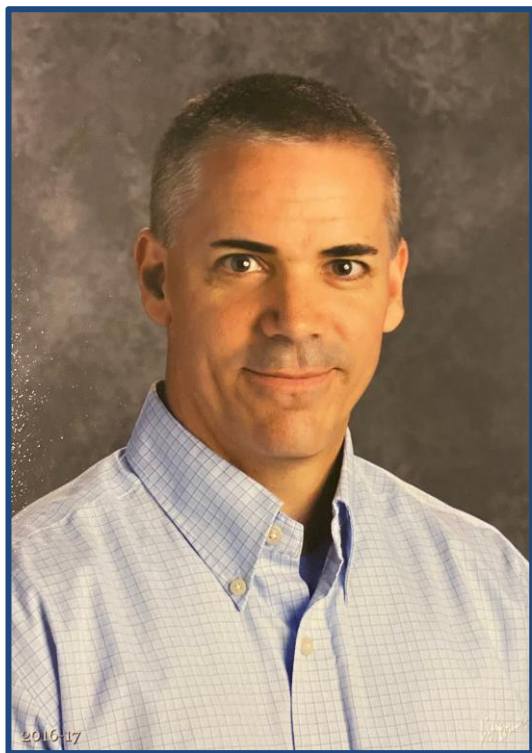# BUSINESS AND INFORMATION TECHNOLOGY AND RELATED CLUSTERS SPECIALIST

DR. DAVID RAYMOND, DIRECTOR, VIRGINIA CYBER RANGE AND U.S. CYBER RANGE, VIRGINIA TECH

CHRIS STARKE, BRIAR WOODS HIGH SCHOOL, LOUDOUN COUNTY PUBLIC SCHOOLS

Chris Starke

- Briar Woods High School (Ashburn/Loudoun Co. PS)

- 6302 Cybersecurity Fundamentals (Intro to Cyber)

- 6304 Cybersecurity Operations

- Cyber Club/CyberPatriot sponsor

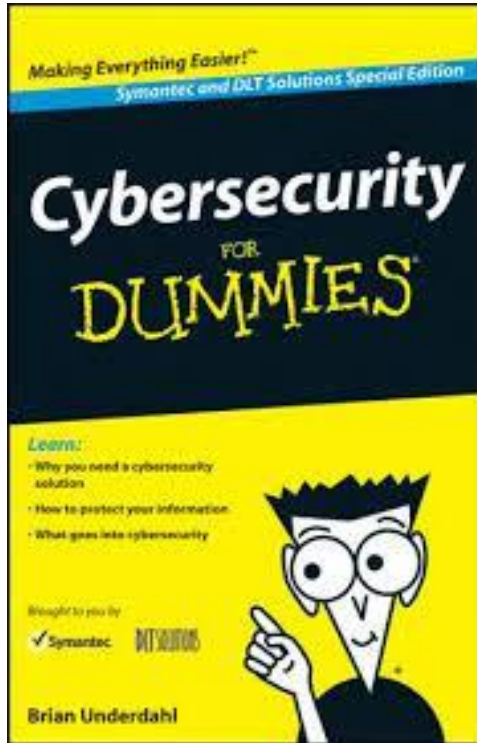- Founder and co-director of Virginia CyberSlam

My Journey into Cyber

https://giphy.com/gifs/teamcoco-guilty-rob-riggle-MuEgMdRME4tTqxinqr
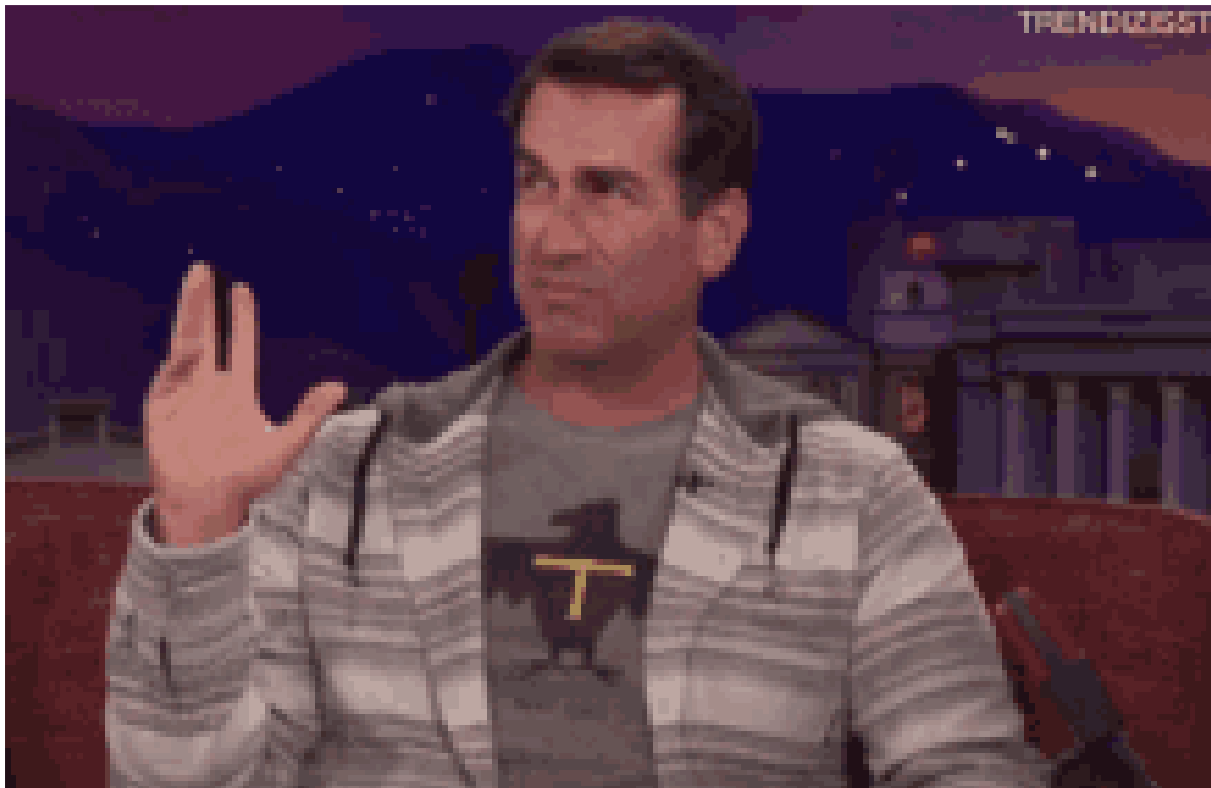
https://www.pngkey.com/detail/u2q8i1q8o0w7y3w7_in-case-of-cyberattack-pull-cables-case-of/

My Journey into Cyber
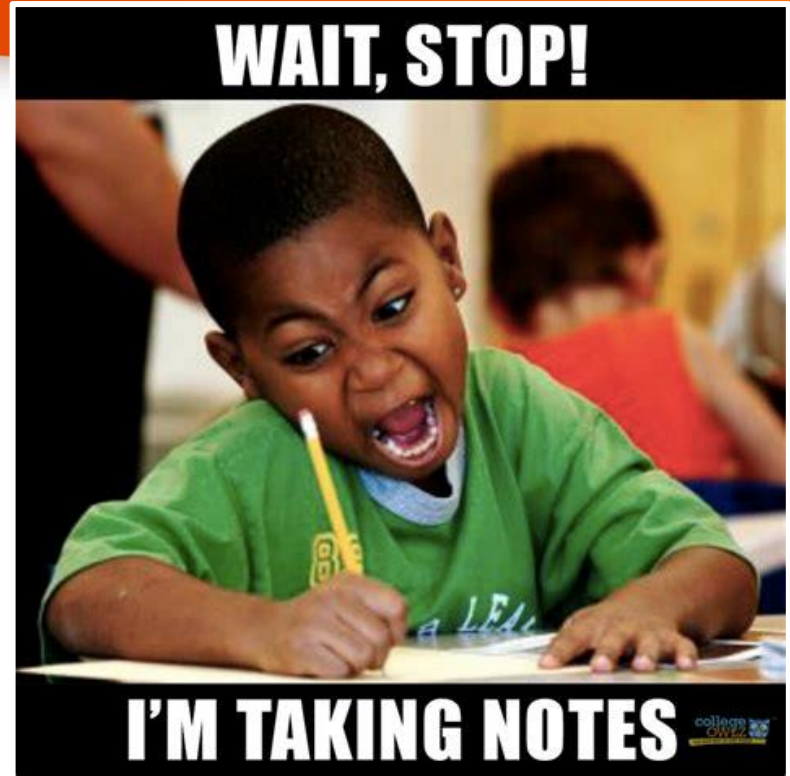
Disclaimer

Before We Really Begin

All resources mentioned will be hyperlinked on the last slide of this presentation

https://memecreator.org/static/images/memes/5351172.jpg

Getting Hands On
Virtual Environments

VIRGINIA CYBER RANGE

- **Courseware** - repository with lessons and activities
- **Exercises** - various virtual environments for the courseware labs
- **Community** - workshop videos / K-12 Advisory Board
- **Resources** - course mappings, links to videos

▶ YouTube

VirginiaCyberRange

Getting Hands On
Additional Resources

CYBER.ORG

CodeHS

TEACH CYBER

PROJECT LEAD THE WAY
PLTW

Getting Hands On
Capture the Flag

Commonwealth Cyber Cup

★ **Inaugural event held March 4 at Spotsylvania HS**
  ○ 140 students
  ○ 16 high schools

★ **Next year's event**
  ○ March 2, 2024
  ○ Blacksburg HS

**Spotsy HS also hosts a student-run cyber camp for middle school students

12 CTE HQWBL Experiences

Grades 6-12	🔵
Grades 9-12	🔴
HS Credit Earned	Green

Service Learning

Externship

Job Shadowing

School-Based Enterprise

Mentorship
140 hours or more
.5 credit

Entrepreneurship
280 hours or more
1 credit

Internship
280 hours or more
1 credit

Cooperative Education
280 hours or more
1 credit

Registered Apprenticeship

Supervised Agricultural Experience (Immersion)
280 hours or more
1 credit

Clinical Experience

Youth Registered Apprenticeship
280 hours or more
1 credit

VDOE

HIGH-QUALITY WORK-BASED
LEARNING
EXPLORE • CONNECT • SUCCEED

CTE HQWBL

Cybersecurity Fundamentals (6302)

> *Mentorship*

- Careers in cyber project
- Explore current events
- Guest speakers
  - Draft questions to ask
  - Write reflection

Cybersecurity Operations (6304)

> *Service Learning*

- Project to benefit the community
- Identify a need
  - online safety for students/elderly
- Research/develop/implement
- Reflect

Work-Based Learning
Guest Speakers

LOUDOUN COUNTY SHERIFF'S OFFICE · VIRGINIA

DEPARTMENT OF JUSTICE · FEDERAL BUREAU OF INVESTIGATION · FIDELITY BRAVERY INTEGRITY

UNITED STATES POSTAL SERVICE ®

NATIONAL SECURITY AGENCY · UNITED STATES OF AMERICA

Telos ®

Google

WELLS FARGO

Work-Based Learning
Tours/Field Trips

"Cyber for Seniors" (6304 Cyber Operations class)

- Teach cyber hygiene at a local senior living community

    - Passwords

    - Secure websites

    - Phishing attacks

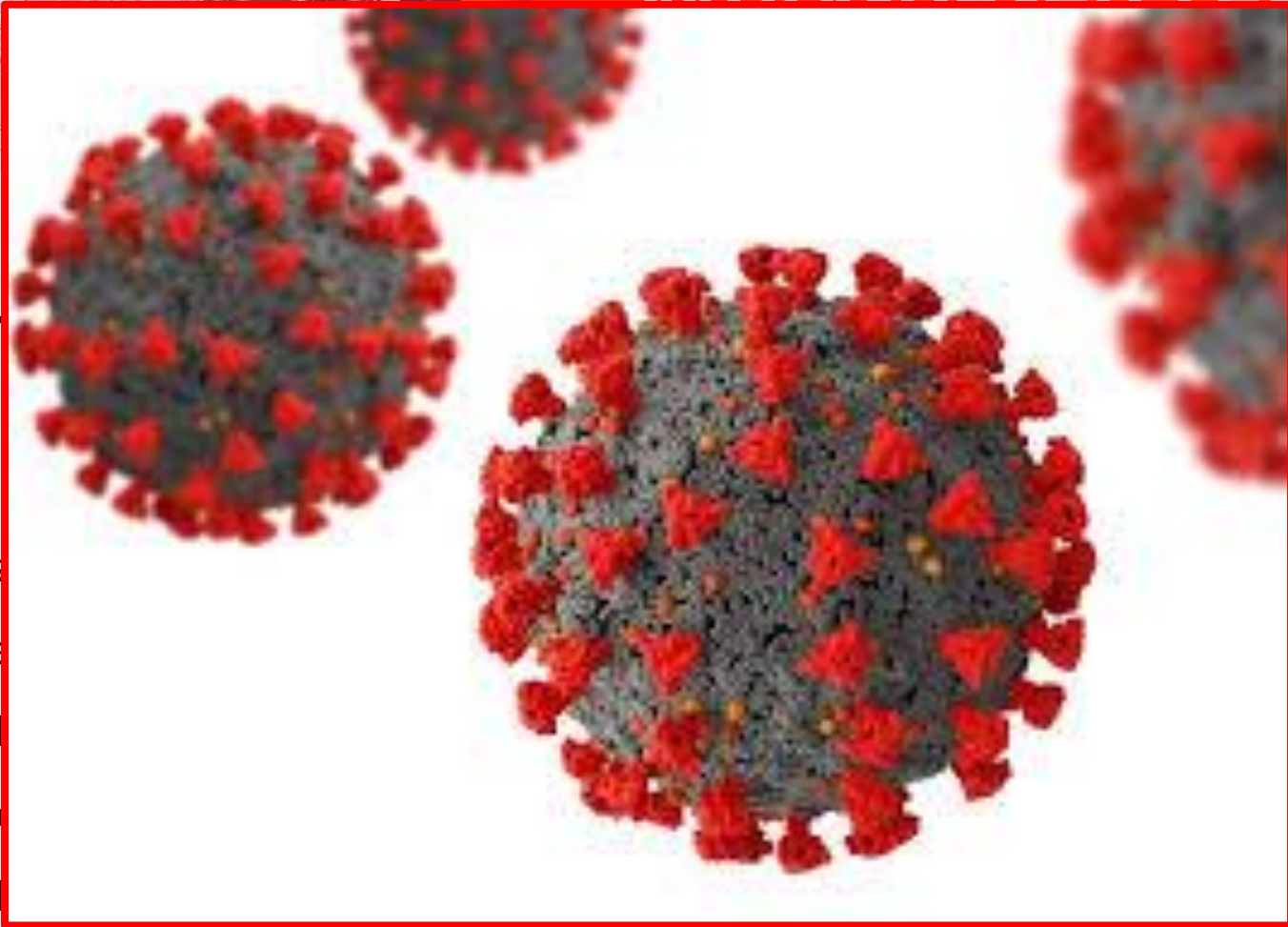   - Romance scams

    - Identity theft

Learning

"Cyber

- Teach

   senior

   ○ Pa

   ○ Se

   ○ Pl

   ○ Re

   ○ Id

- Cybersecurity Operations (6304)
- Cybersecurity Awareness Week (Mar. 27-31)
- Brainstormed/finalized topics
  - Social media use
  - Digital footprint
  - Passwords
  - Phishing attacks
  - Online shopping
- School-wide advisory lesson
  - Combination of content (2-3 slides) with a short, hands-on activity
- Wrote PSAs/read over morning announcements

The Importance of Cybersecurity Awareness

Be What?
Be Cyber Smart!

Passwords

Did You Know?
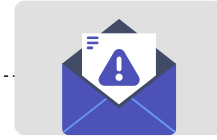
Reused
51% of passwords are reused[1]

Cyber Attacks
Everyday 2,200 cyber attacks occur worldwide[2]

Memory
53% of people rely on their memory to manage passwords[3]

Password Tips

Length
Use 14-16 characters

Complexity
Use a mix of uppercase and lowercase letters, numbers, and special characters

Change
Change your passwords every 3 months

Unique
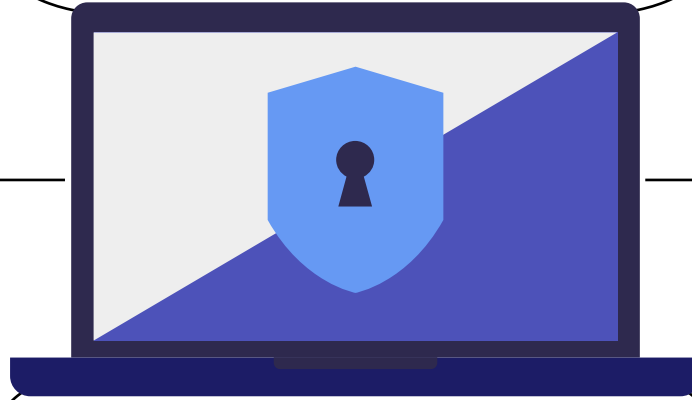Never use the same password for multiple accounts

Storing
Use a password manager to help you remember long passwords

Sharing
Do not share your passwords

How Secure is YOUR Password?

Scan the QR Code below and find out how secure your password is!

How Secure Is My Password?

✅ The #1 Password Strength Tool. Trusted and used by millions.

ENTER PASSWORD

Entries are 100% secure and not stored in any way or shared with anyone. Period.

Interested in getting your personalized physical and digital security score? Visit our new tool here.
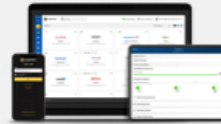
https://www.security.org/how-secure-is-my-password/

Home Security   Smart Home   Digital Security   About Us   Privacy Analyzer GPT

How Secure Is My Password?

✅ **The #1 Password Strength Tool. Trusted and used by millions.**

••••••••   ⬅ password

Your password would be cracked

Instantly

How Secure Is My Password?

✅ **The #1 Password Strength Tool. Trusted and used by millions.**

•••••••••••••••••••

It would take a computer about

2 billion years

to crack your password

Cyber Club/ CyberPatriot

- **Two industry professionals as mentors**
  - Cisco, GT Edge Solutions
- **August - January:**
  - *CyberPatriot is primary focus*
- **January - June: hands on activities**
  - *Current events (student presentations)*
  - *Capture the Flag (CTF) events*
  - *Packet Tracer labs (Cisco network simulator)*
  - *Certification training and preparation (student-run)*
  - *Building a network (physical components)*

Senior Capstone

- Five students from Briar Woods (3) and Rock Ridge (2)
- Worked with owner of GT Edge Solutions (one of my Cyber Club mentors)
- Hands-on practical experience designing, building
and running personal projects
  - Built a penetration testing lab
  - Built a laptop that runs both Windows and Linux,
    installed Apache web server and built own website
  - Built a Kali Linux virtual machine and ran penetration testing exercises
  - Built an interactive game powered by AI
  - Built an interactive website for community projects

CYBERSLAM

- Cybersecurity "conference" for high school students
- Hosted by George Mason University (Jan. 9, 2023)
- Over 400 students from 22 high schools and 5 counties
- Presenters included:
  - Dr. Liza Wilson Durant (GMU/CCI)
  - Aliscia Andrews (VA Dep. Secretary of Homeland Security)
  - United States Secret Service (Global Investigations Operations)
  - Dr. David Raymond, Virginia Cyber Range (Capture the Flag)
  - Dr. Chuck Gardner, CYBER.ORG (Cryptography)
  - Mary Kim, Raytheon Technologies (Penetration Testing)
  - Dr. Melissa Stange & Dr. Henry Coffman, GMU (Drones)

Virginia CYBERSLAM 2023

Thank You!

GEORGE MASON UNIVERSITY | Volgenau School of Engineering

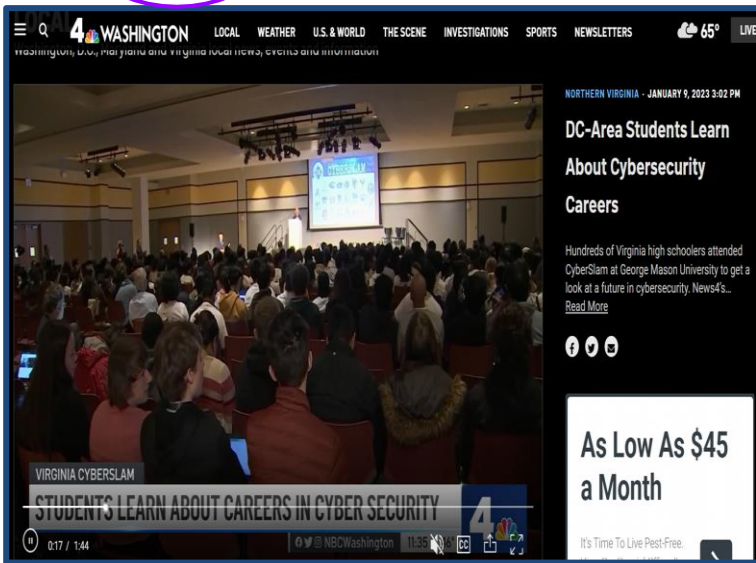| Dr. Peggy Brouse | Mr. Renaldo Bryson | Ms. Tavia Burden |
Dr. Henry Coffman	Dr. Paulo Costa	Mr. Sean Cox
Dr. Liza Wilson Durant	Ms. Laura Horn	Ms. Amanda Naylor
Dr. John Shortle	Dr. Melissa Stange	Ms. Becca Stevenson

Virginia CYBERSLAM 2023

VIRGINIA CYBER SLAM 2023

Media Coverage

https://www.nbcwashington.com/news/local/dc-area-students-learn-about-cybersecurity-careers/3250565/

https://www.lcps.org/site/default.aspx?PageType=3&DomainID=1&ModuleInstanceID=274904&ViewID=6446EE88-D30C-497E-9316-3F8874B3E108&RenderLoc=0&FlexDataID=449663&PageID=1

https://www.loudounnow.com/news/virginia-cyberslam-2023-draws-students-from-5-counties/article_51f94a60-9062-11ed-a23b-f3ad1146f2fe.html
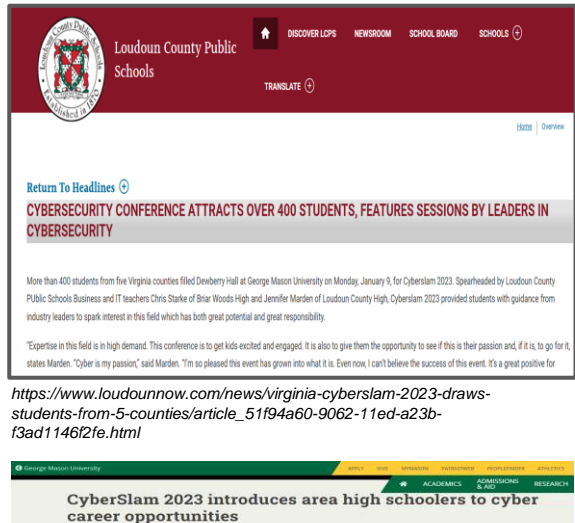
https://www.gmu.edu/news/2023-01/cyberslam-2023-introduces-area-high-schoolers-cyber-career-opportunities

CyberSlam received a commendation from the Virginia General Assembly (HJR627, passed February 16, 2023).

Delegate David Reid (D-32) presented the commendation May 23 at the LCPS Administration Building in Ashburn.

Loudoun High Schools' 2023 CyberSlam Commended by General Assembly

Staff Report   May 25, 2023   💬 0

Virginia Deputy Secretary of Homeland Security and Assistant Homeland Security Advisor Aliscia Andrews, Rock Ridge High School cybersecurity teacher Roxana Cromwell, Jen Marden, Del. Dave Reid (D-32), Chris Starke and Laurel Ridge Community College professor at Loudoun County High School May 23.
Contributed/Jen Marden

Two Loudoun County teachers on May 23 were presented a commendation from the Virginia General Assembly for developing the 2023 Virginia CyberSlam conference, a cybersecurity event geared to high school students.

Loudoun County High School cybersecurity teacher Jen Marden and Briar Woods cybersecurity teacher Chris Starke were commended for their work in developing the cybersecurity conference for over 400 high school students in January.

Networking/ Additional Opportunities

July 19-20, 2023
Charlottesville

Key Takeaways

- **Get hands-on!**
  - Virtual environments, Capture the Flag

- **Network with those around you**
  - Both inside and outside of your district
  - Share ideas, lessons, and activities (have no fear to ask others for stuff)

- **Leverage who you know**
  - Parents in the cyber industry (guest speakers, possible hands-on experiences)
  - Local businesses, organizations, Economic Development, Chamber of Commerce

Key Takeaways

- **Cyber Club/CyberPatriot**
  - CyberPatriot has a list of mentors if you need one
- **Go virtual**
  - Allows for guest speakers from outside your area
  - Team with other schools where possible
- **Host an event**
  - Capture The Flag (CTF)
  - Your own "CyberSlam"
  - Camp - your students/middle schoolers (feeder school/s)
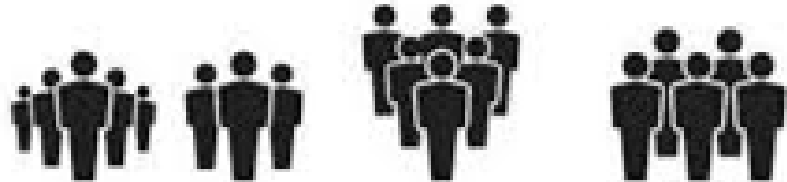
Key Takeaways

- **Keep it simple**
  - Find something reasonable/realistic for your students
  - Let them brainstorm ideas and join the activity of their choice/interest

- **Divide and Conquer**
  - Full class
  - Groups

Resources
(from this presentation)

Teaching Resources
- CodeHS (full courses)**
- CYBER.ORG (lessons, labs, full curricula)
- Project Lead the Way (full courses)**
- Teach Cyber (lessons, labs, curriculum guidelines)
- Virginia Cyber Range website
- Virginia Cyber Range YouTube channel

Training
- GenCyber Camps
  (for teachers and students)

Student Activities
- Commonwealth Cyber Cup
- CyberPatriot
- CyberStart America
- Radford University RUSecureCTF

Activities from this presentation
- How Secure is my Password?
- Phishing Quiz

CyberSlam Media Coverage

CyberSlam 2022 *(held April 2, 2022 at Briar Woods High School)*
- CyberSlam Conference to Engage Loudoun Students in Cybersecurity *(Loudoun Now, Mar. 22, 2022)*
- Students Explore Cybersecurity Careers During First-Ever CyberSlam *(Loudoun Now, Apr. 4, 2022)*
- A CyberSlam Dunk for LCPS *(LCPS, Apr. 7, 2022)*

CyberSlam 2023 *(held January 9, 2023 at George Mason University)*
- Virginia CyberSlam Returns *(Loudoun Now, January 5, 2023)*
- DC-Area Students Learn About Cybersecurity Careers *(NBC4, Jan. 9, 2023)*
- Virginia CyberSlam 2023 Draws Students from 5 Counties *(Loudoun Now, Jan 10, 2023)*
- CyberSlam 2023 introduces high schoolers to cyber career opportunities *(GMU, Jan. 12, 2023)*
- Cybersecurity Conference Attracts Over 400 Students *(LCPS, Jan. 20, 2023)*
- CyberSlam Commended by General Assembly *(Loudoun Now, May 25, 2023)*

Chris Starke

(Briar Woods HS/Loudoun)

chris.starke@lcps.org

COURSE CONNECTIONS

Agricultural Education

- Cybersecurity in Food and Agriculture (8074)
- Cybersecurity in Food and Agriculture, Advanced (8075)

Business and Information Technology

- Cybersecurity Fundamentals (6302)
- Cybersecurity Operations (6304)
- Cybersecurity Operations, Advanced (6306)

Family and Consumer Sciences

- Cybersecurity in Family and Consumer Sciences (8291)
- Cybersecurity in Family and Consumer Sciences, Advanced (8292)

PATHWAYS
FOR THE FUTURE

COURSE CONNECTIONS

Health and Medical Sciences

- Healthcare Information Security (8339)

Marketing

- Cybersecurity in Marketing (8126)
- Cybersecurity in Marketing, Advanced (8127)

Technology Education

- Cybersecurity in Manufacturing (8499)
- Cybersecurity in Manufacturing, Advanced (8496)

Trade and Industrial Education

- Cybersecurity Network Systems (8630)
- Cybersecurity Systems Technology (8628)
- Cybersecurity Systems Technology, Advanced (8629)

PATHWAYS FOR THE FUTURE

CREDENTIALS/CERTIFICATIONS

Certified Cybersecurity Technician

Certified Incident Handler Examination

Computer Hacking Forensic Investigation
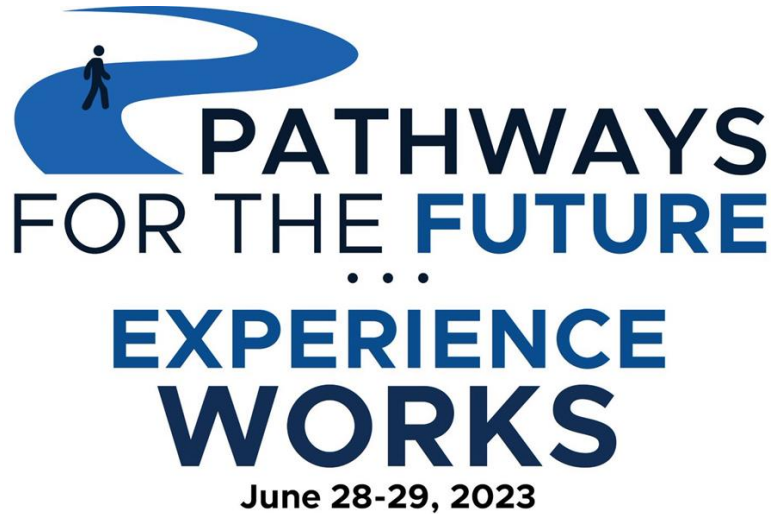
Certified Network Defender

Digital Forensics Essentials

Ethical Hacking Essentials

Network Defense Essentials

Board of Education Additional approved Industry Credentials Aligned with Cybersecurity Courses for use starting with the 2023-2024 School Year

PATHWAYS FOR THE FUTURE

PATHWAYS FOR THE FUTURE ... EXPERIENCE WORKS

June 28-29, 2023

Earn Your PD Points!

Please complete the survey at the end of this Zoom session