

CyberWatch



K-12 Division

Davina Pruitt-Mentle, PhD



Sponsored by the National
Science Foundation





Expanding Knowledge in Cyberawareness and Careers in Cybersecurity

10th Annual C3 Conference

Cyberethics, Cybersafety, and Cybersecurity

October 6-7, 2011
University of Maryland

[Learn More](#)



SAVE THE DATE

- WHAT'S NEW
- SECURE IT 2011 Spring Programs
 - MD High School Network Security Competition
 - Mid-Atlantic CCDC High School Activities: March 10-12, 2011
 - MD US Cyber Camps: July 11-14/July 18-22
 - 2011 Summer CyberSecurity Pathways PD
 - 2011 Summer Cyber Warrior Camps



PROGRAMS

We have a wide range of programs, content and activities for formal and informal settings. The central focus is Cybersecurity content, but it is supported by the too often neglected topics of citizen awareness of ethics, safety and security. [More](#)



WORKFORCE AWARENESS

What is CyberSecurity? What is Information Assurance? What career options are there in CyberSecurity and what pathways are there? [More](#)



C3 AWARENESS

We inform the educational community about Cyberethical, Cybersafety and CyberSecurity (C3) implications of technology use and illustrate how students, educators and parents can apply these concepts to their own setting. [More](#)



K12 IT SYSTEMS

Workshops are conducted at partner institutions on a variety of topics determined by our annual needs assessment survey. [More](#)



May be interested in...

- ▶ CISSE K12 Working Group Report
- ▶ CACE K12 Working Group Report

- ▶ Cybersecurity Education in K12 (October 2011)



Summit on Cybersecurity Education in K12

SECURE IT: Strategies to Encourage Cybersecurity Education



ETPRO

Current Research Projects

National Cyberethics, Cybersafety and Cybersecurity Education Research Project

- ▶ Research Priorities in Cyberethics, Cybersafety and Cybersecurity: A Delphi Study
- ▶ Review of Research: The Status of Cyberawareness in US Schools
- ▶ Effects of C3 Curriculum Integration on Attitudes of Teachers and Students
- ▶ Students Perceptions of Internet Safety Modules
- ▶ School-Based Staff Development for Teaching Cyberethics, Safety and Security Curriculum
- ▶ Gender Differences in Student Attitudes Toward Internet Safety Curriculum



K-12 Programs

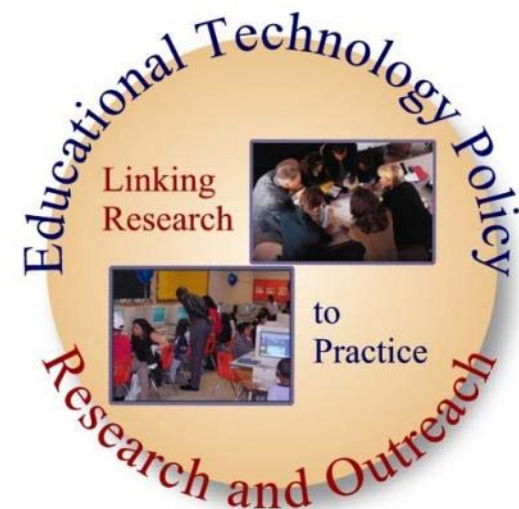


- ▶ **K-12 Division Goals include increasing:**
 - The Cybersecurity workforce pipeline
 - Community awareness of the Cybersecurity workforce
 - Community awareness of C3-Cyberethics, Safety and Security, and
 - Security of K-12 IT systems



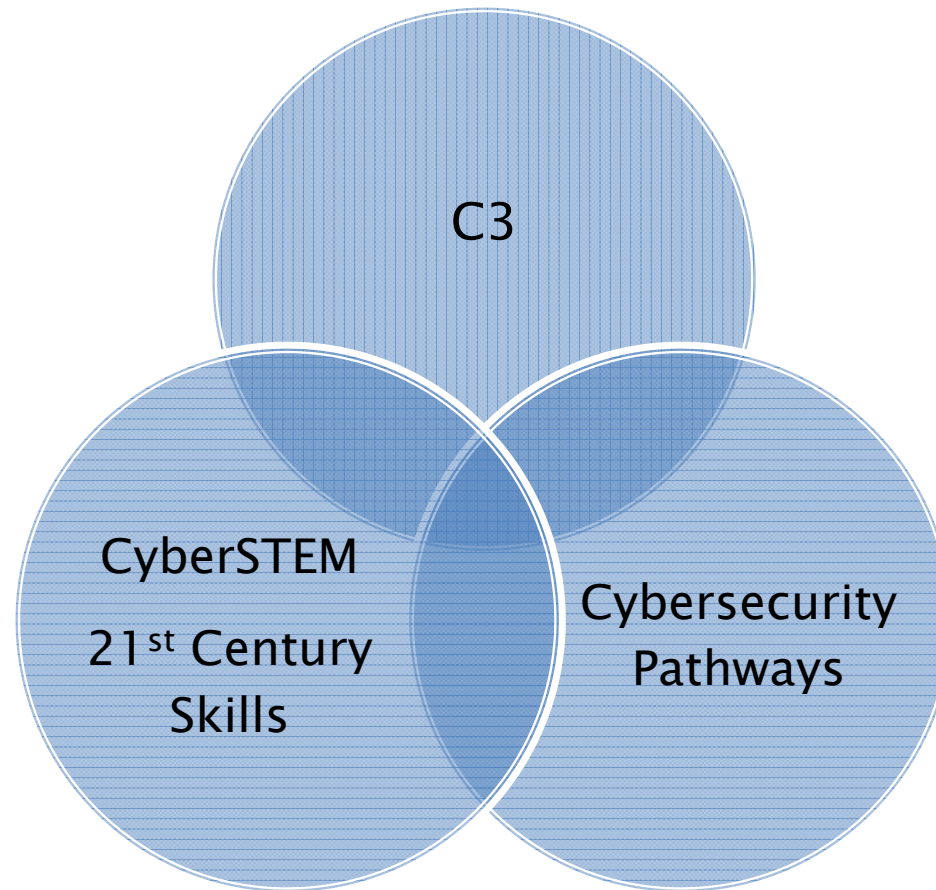
K-12 Pipeline

- ▶ Annual Cyberethics, Cybersafety and Cybersecurity (C3) Conference
- ▶ Cool Careers in Cybersecurity for Girls Summit
- ▶ Careers in Cybersecurity for Guidance Counselors Workshop
- ▶ After School/Enrichment
 - Cyber Clubs
 - MINDTOOLS
 - CyberSTEM
- ▶ Summer Cyber Academies
- ▶ CW K12 CyberSTEM Content
- ▶ Competitions
- ▶ SECURE IT: *Strategies to Encourage Careers in Cybersecurity and IT*
- ▶ CTE Cybersecurity Track





Design





Students

- After-school programs
- In-School Modules
- Cool Careers for Girls Summit
- Summer Cyber Academies
- CTE Track – Cybersecurity

Educators

- Training for Teachers
- Annual C3 Conference
- Guidance Counselor Workshop
- Curriculum

Two and Four Year

- Articulation Agreements
- Collaborative Curriculum Development and Refresh



Content Framework

▶ History

- Standards Driven
- Interdisciplinary
- Formative and summative assessments
- Understanding by Design (UbD)
- Inquiry-based teaching and learning
- Problem-Based Learning - (PBL)
- 5E Teaching, Learning, and Assessing Cycle
- Strong equity component
- Parent component
- Community Based Model

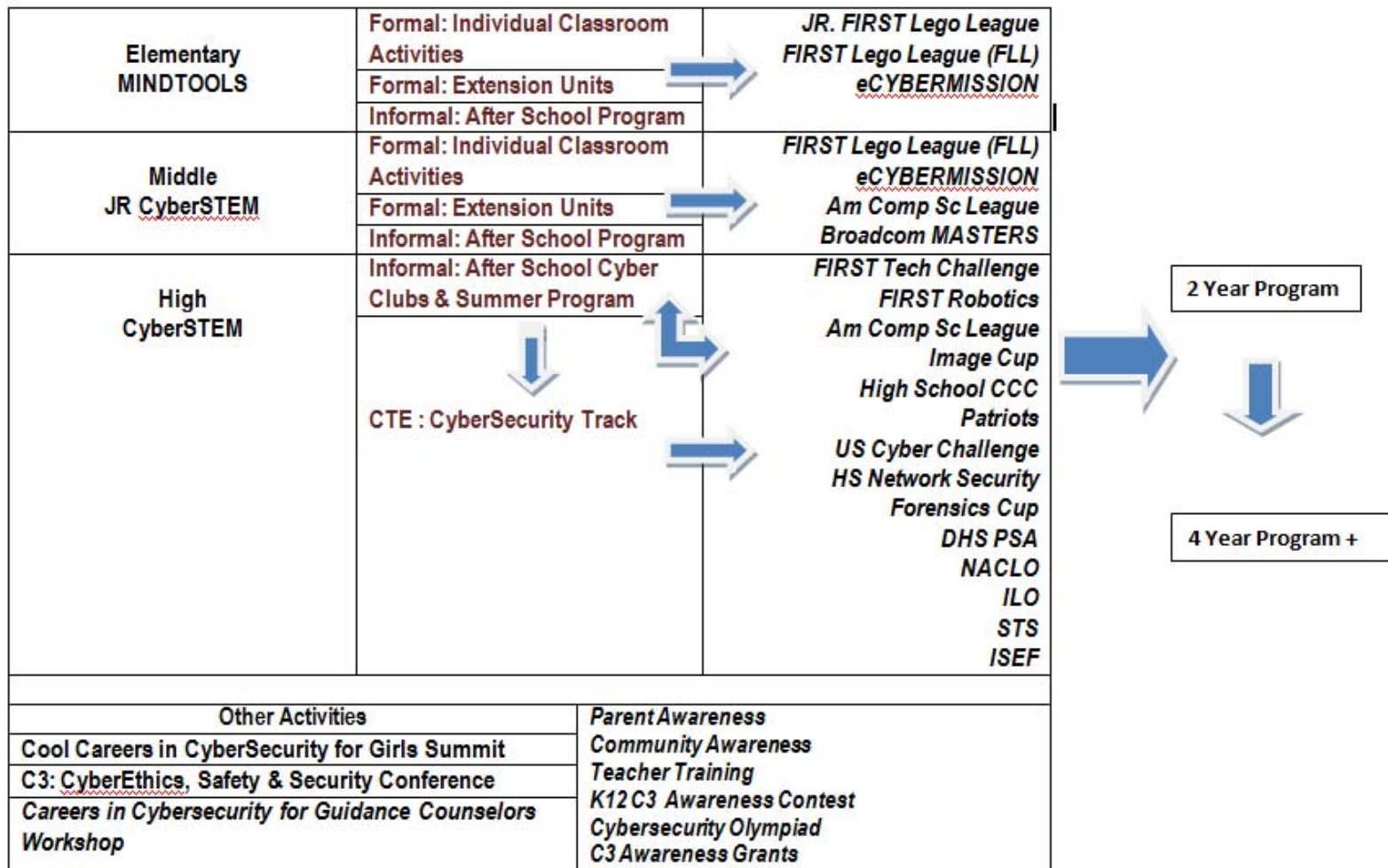
▶ Misconceptions

- Not stand alone content
- Not JUST informal
- Not just IA/Cybersecurity



SECURE IT OVERVIEW

Strategies to Encourage Careers in CyberSecurity and Informational Technology





Numbers for Maryland Only CyberSTEM Camps Only (not other camps we run)

	Summer Programs Direct	After School Programs Direct	Guidance Counselor Workshop	Cool Careers Girls	Teachers/Parents-Girls	C3 Educators C3 Conference	Other Training	Summer Programs InDirect	After School Programs InDirect
2005-06	(not under this grant)					147			
2006-07 CWI	20		63	80	8	149	300	300	
2007-08 CWI	57	46		79	5	233	324	600	300
2008-09 CWI	72	18	72	172	4	350	250	600	300
2009-10 CWII (150K for camps)	250	33	75	150	22	456	300	3000	600
2010-11 CWII	195								
		201	Sept 27, 2011	Oct 18, 2011	Oct 18, 2011	Oct 6-7	460	3000	1800
TOTAL	594	298	210	481	39	1188	1634	7500	3000



Thank You
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New Efforts in 2011

- ▶ **HS Networking Security Competition (partnership with CSSIA)**
- ▶ **Mid-Atlantic CCDC High School Activities**
 - High school shadowing and activities for HS students
- ▶ **MD USCC Cyber Camp**
- ▶ **MD Summer Cyber Camp**
- ▶ **2011 Summer Cybersecurity Pathways PD**
 - For teachers teaching CTE track
- ▶ **C3 Schools Initiative (Cyber Schools)**
- ▶ **CyberMaryland**
- ▶ **C3 Student/Educator Newsletter**
- ▶ *Journal of Cyberethics, Safety and Security Education*



K-12 Program

Annual Careers in IA/IS Guidance Counselors Workshop



Cool Careers in Cybersecurity for Girls

October 1-2, 2009
UMD Campus [Map](#) [Directions and Parking](#)

Home Agendas Workshop Sponsors Hotel & Travel FAQ's Press Awards Register

8th Annual Cyberethics, Cybersecurity, and Cyberawareness Conference

2009 C3[®] Conference a Success. Thanks for Attending.

Certificate of Participation
 Online Conference Evaluation
 Due Dec 7, 2009
 Content Evaluation
 Due Dec 7, 2009

2010 C3[®] Conference Information

Call for 2010 Presenters - Due May 10, 2010
 Call for Nominations: C3 Award of Excellence [Rising] - Due June 4, 2010
 2010 Grant Applications [Rising] - Due December 7, 2009

- C3[®] Framework
- C3[®] Matrix

2009 Speakers

- Lyn Allen
Web Wise Kids
- Jay Banebach
Maryland State Department of Education
- Mala Bauer
CyberSmart Education
- Frank Gallagher
Cable in the Classroom
- Bonnie S. Greenberg
Project Safe Childhood Coordinator
- Todd Hallock
Common Sense Media

October 1-2, 2009 • University of Maryland Campus

The core mission of the C3[®] Conference is to inform the educational community about the ethical, legal, safety, and security implications of technology use and illustrate how educators and parents can apply these concepts to their own setting. Tutorial sessions include practical applications that can be immediately applied to your home or classroom setting.

Participants will hear from state and local educators, law enforcement, internet safety/security curriculum providers and researchers, and policy makers on a broad range of topics to include: current and pending legislation, educational initiatives available, the latest "hot topics" to include cyberbullying, identity theft and sexting, internet safety provider updates, online reputation management, newly released online interactive simulations and games that promote responsible online behavior,

Cybersecurity
The Forgotten Element



Digital Footprints:
Online Identity Management
2009 Fall STEM Coordinators Meeting

Davina Pruitt-Mentle, Ph.D.
 Director
 Ed Tech Policy, Research and Outreach

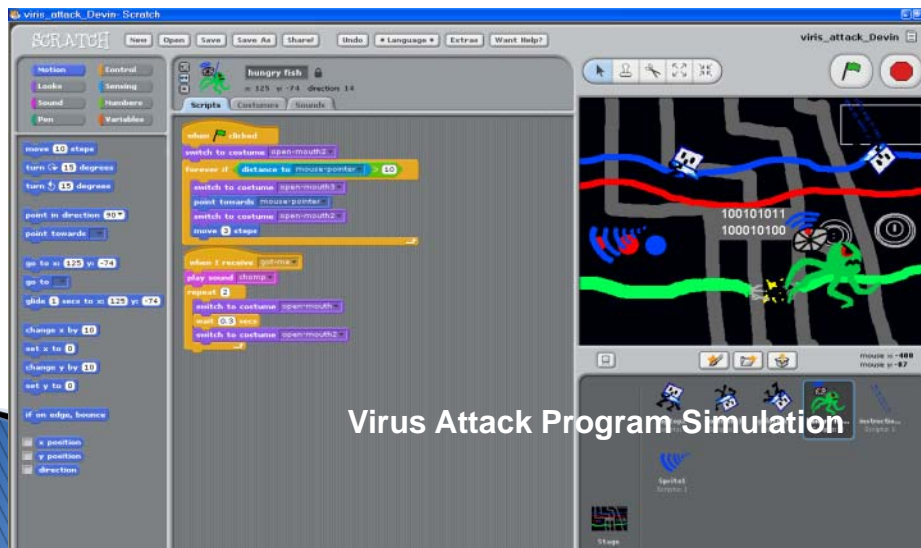
Annual C3 Conference

PD Opportunities and Speaking Topics



K-12 Program

- Informal after school programs
 - Mindtools (4-5)
 - JR. CyberwarriorProgram (6-8)
- Summer Cyberwarrior high school programs



Formal Lesson Plans
High School Clubs
4H
Girl Scouts



CW K12 Modules

5 Content Modules

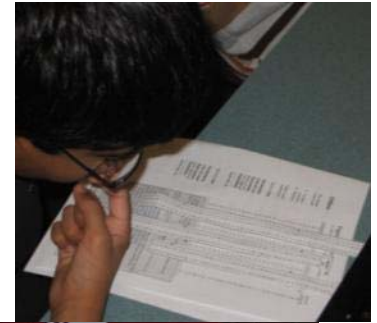
- *Computational Logic/Programming—Scripting*
- *Cryptography*
- *Digital Ethics, Safety and Security*
- *System Vulnerabilities*
- *Digital Forensics*

- Grade bands 4–5, 6–8 and 9–12

- Tied to national and state standards and partnering school system math, science & technology curriculum, students engage in hands-on STEM activities and improve digital literacy skills while learning and applying concepts through gaming, modeling and simulation development.

- Speakers and field trips

- The central focus is the field of IA, but supported by the too often neglected topics of citizen awareness of Cyberethics, safety and security.





CW K12 Curriculum

Curriculum and curriculum modules

- 5 modules:
 - *Cryptography; Programming; Digital Ethics, Safety and Security; System Vulnerabilities; Digital Forensics*
- Grade bands 4–5, 6–8 and 9–12
- Tied to partnering school system math and science curriculum, students engage in hands–on STEM activities and improve digital literacy skills while learning and applying concepts through gaming, modeling and simulation development
- Speakers and field trips
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Programming	Cryptography	Digital Ethics, Safety and Security	System Vulnerabilities	Digital Forensics
Elementary School				
Intro to LOGO - MicroWorlds Interactive PPT	Intro to cryptology & cryptanalysis Transposition cipher Invisible ink	Password/passphrases Cyberbullying	Free iPod-Opening Attachments Pop Ups	Decoding/Debugging I/II MW programming Learning Binary Name in Computer "Talk"-Binary Numbers
Scratch Robotics I - RoboLab	Substitution cipher (cipher wheels) NSA Codemakers Codebreakers	Who's Who Online Digital Footprints	Password Guessing	Bar coding Real or Unreal (Detecting scams)
Middle School				
Computational Logic MicroWorlds/Scratch Robotics II - Mindstorms	Intro to cryptology & cryptanalysis Coding/decoding -out of the box Substitution cipher and letter/number frequency	Passwords/Passphrases /cyberbullying Online Reputation Management Dangerous Uploads Security Clearances Copyright/Plagiarism Social Networks	System Upkeeps/Patching Phishing/Pharming/Hijacking Password Cracking SNS Malware	Recognition of similar patterns Needle in a Hay Stack (where's the bad code)
Google SketchUp NetLogo Alice	Cryptography Scavenger Hunt Geometric cipher			
High School				
Computational Logic II Raptor MicroWorlds/Scratch Python Programming in Excel StarLogo/NetLogo Robotics III Mindstorms	Intro to cryptology & cryptanalysis Substation ciphers Paper Enigma Algebraic ciphers Intro Computer cryptography 2 key cryptography	Passphrases/patterns-encryption Cyberbullying Sexting Online Reputation Management	Security Layering Firewalls Password Cracking II Reconnaissance Wireshark Pasco Patterns SNS Malware II Identity Theft	Deleted/Hidden Files SIM reader exercise Roadrunner exercise SamSpade exercise FTK Image Lite EnCase (CWDFL)
Alice		Copyright/Plagiarism Security Clearances File Sharing/ LimeWire Social Networks		Reverse Engineering Steganography



What's Missing

High School → 2 Year → 4 Year





High School Information Assurance Track

- ▶ CW 110 Computer Ethics (can also make use of Simulation Case studies via NSF grant)
- ▶ CW 130 Understanding Operating Systems
- ▶ **CW 160 Computer Security, Security+**
- ▶ CW 150/151 Networking—w/ some existing track course (Cisco 1 & 2)

- ▶ Other ideas
- ▶ CW 230 Windows 2003 Server
- ▶ **CW 235 Network Defense and Countermeasures**

Foundation needed for:

CompTIA's Security +

Cisco CCNA Preparation certificate

Apply credits IA A.A.S. degree

CISSP Prep Exam

WIRESHARK Certified network Analyst

CCENT Cert

6TH CYBERWATCH MID-ATLANTIC COLLEGIATE CYBER DEFENSE COMPETITION

COLLEGIATE CYBER DEFENSE COMPETITION

CYBERWATCH MID-ATLANTIC REGIONAL **CCDC**

March 10 - 12 - 2011
Smart Grid Technologies

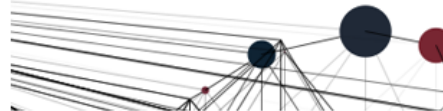
Recent News

Sep.7 Cyber Competition Pits Hackers Against Computer Networks at Hopkins APL/CyberWatch Competition

Jun.23 Wanted: Young Cyberexperts to Defend Internet

Jun.3 CCDC and the Tale of the Insider Threat

TEAM REGISTRATION



The CyberWatch Mid-Atlantic CCDC is open to all two- and four-year undergraduate and graduate students in Delaware, Maryland, North Carolina, Pennsylvania, Virginia, and Washington, D.C. Team registrations start October 10, 2010 and are due by December 10, 2010 (by 5 PM EST).

AGENDA

The Mid-Atlantic CCDC runs for three full days. Check out the activities here.

Past Organizers, Sponsors and Contributors





Security Awareness Contest



WHAT'S IT ALL ABOUT?

The EDUCAUSE and Internet2 Higher Education Information Security Council, with sponsorship by the National Cyber Security Alliance (NCSA) and CyberWatch, is seeking creative and educational videos and posters on information security to be part of a national campaign to increase information security awareness at colleges and universities.

WHAT'S IT ALL ABOUT?

If your video or poster is selected you'll get exposure for your work on the EDUCAUSE security web site (educause.edu/security), from media announcements, and as part of campus security awareness campaigns across the country. And that's not all — winners receive cash prizes:

- Gold: \$1,500
- Silver: \$1,000
- Bronze: \$500

WAYS YOU CAN PARTICIPATE:

- Training or instructional video (2 minutes or less)
- Public service announcement (PSA) (30 seconds or less)
- Poster

Submissions should address information security problems and/or suggest effective ways of handling them.

Deadline to enter: March 31, 2011

WANT MORE INFORMATION?

For topic suggestions or help, contact us.

Email: security-video@educause.edu

Web: educause.edu/securityvideocontest2011

Presented by:



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