Careers in Cybersecurity Workshop
For Counselors and STEM Coordinators

Tuesday, September 27, 2011
9:00 am – 3:00 pm

Summary Report

JHU Columbia Center- Gateway Park
6740 Alexander Bell Drive   Columbia, Maryland

ETPRO/CyberWatch
Careers in CyberSecurity Workshop

2011-2012

Event Summary
A full day workshop occurred on September 27, 2011, held at the Johns Hopkins University, Columbia Center, Columbia, MD in partnership with the MD State Department of Education and JHU Carey School of Business. The workshop focused on educating counselors and STEM coordinators on current and future career options for students in Cybersecurity, what's expected (i.e., clearances, courses, certificates) and how to get there. 59 educators were in attendance. Counselors who were National Board certified could receive CEU credit through MSDE. Representatives from NIST, NSA, Lockheed Martin, JHU, PGCC, Hagerstown CC, US Naval Academy, and STOP THINK CONNECT also came and manned a table to share materials and answer questions from attendees during breaks and the networking timeslots.

The core mission of the workshop is to increase educator awareness of the workforce needs of the United States in Cybersecurity and related fields (digital forensics, homeland security, network security, systems administrator, Cybersecurity etc.), inform counselors about career pathways including 2 and 4 year degree and/or certification tracks and describe security clearance levels, and the process for obtaining them.

This workshop began with an opening snapshot of the growing demand of workers in information security [see presentation at http://www.edtechpolicy.org/cyberk12/GuidanceCounselor/2011/careers_in_Cybersecurity.pdf] , and then moved on to situate the growing need within our Maryland community. Peggy Maxson, Director for the National Cybersecurity Education Strategy at the Department for Homeland Security, then shared the newly released National Cybersecurity Framework http://csrc.nist.gov/nice/framework/ which helped attendees better understand the agreed upon functional titles, roles and pathways [see presentation at http://csrc.nist.gov/nice/framework/] . Panelists then shared insight from the perspectives of large and small agencies and institutions and through the lens of students entering career paths themselves. See presentations at http://csrc.nist.gov/nice/framework/. Information was provided from large and small business entities about current and future job opportunities, and Marc Noble from (ISC)[2] helped us decipher the various mazes of certification programs and career options. http://www.edtechpolicy.org/cyberk12/GuidanceCounselor/2011/HSNI%20Career%20Levels%20and%20Traditional%20Paths.pdf Nicole Smith, Senior Economist from the Georgetown University Center on Education and Workforce, shared the findings from the newly released *College Payoff Report http://cew.georgetown.edu/collegepayoff/* *[View presentation at http://www.edtechpolicy.org/cyberk12/GuidanceCounselor/2011/Nicole_JHU_9_27_2011.pdf]* . We ended by sharing a list of possible cyber challenges and other competitions and resources to share with attendees' school staff and students. Competition

references can be viewed at
http://www.edtechpolicy.org/cyberk12/c3othercompetitions.html

All materials and handouts are archived at
http://www.edtechpolicy.org/cyberk12/c3workforceguidance.html

Additionally, stipends @$50.00 will made available through NSF (National Science Foundation) funding for a maximum 20 guidance counselors based on 1) first come first serve basis and 2) stipend participants were asked to create recruitment brochures/ fliers based on workshop content that will then be shared with students and parents (and other GC), and to present materials and/or new resources with faculty and/or parents at their school. Stipend awardees were required to attend the stipend briefing. Materials, once created and sent back by deadline of Nov 15, will be added to the website for others to view, utilize and share.

Summary Evaluation

The workshop was uniformly regarded as excellent and essential by both participants and speakers. Summary evaluation and comments are listed below.

Questions	Average Evaluation (0-strongly disagree, 4 – strongly agree)	Standard Deviation
General Questions		
The workshop's objectives/goals were clear	3.7	.53
The 1 day length of the workshop was sufficient time to cover the subject matter	3.5	.74
Overall, the workshop speakers were effective	3.5	.51
The workshop materials are useful	3.6	.50
I learned new information in this workshop	3.7	.45
I will use the information that I learned in this workshop in my current position	3.7	.55
I would recommend this workshop to others	3.8	.41
Considering what I learned in the workshop, the cost was reasonable.	4.0	.19
Speaker Presentations		
Davina Pruitt-Mentle "CyberSecurity: A Growth Career" was relevant and useful	3.5	.69
Opening remarks from **Peggy Maxson, DHS about National Cybersecurity Framework** was relevant and useful	3.5	.63
The Higher Education Panel discussion was relevant and useful	3.7	.48
The **Networking Lunch** was relevant and useful	3.5	.57

The Student Panel was relevant and useful	3.8	.41
Nicole Smith, College Payoff, was relevant and useful	3.8	.44
Marc Noble, decoding the CyberSecurity Profession was relevant and useful	2.8	1.05
The **Decoding the Competitions** (if time) was relevant and useful – leave blank if not covered	3.6	.78

Please list one thing you learned today?

- the top ten jobs
- A greater understanding of the computer field in general & importance and opportunities in cybersecurity
- the LiNGO! Handout helped
- that resources exist for counselors
- Land parties & different fields of cyber security
- the numerous career related to cybersecurity
- Learned about all the camps/clubs and opportunities for high schoolers
- Identifying resources for career programs & research and assessing the current state of education
- The vast opportunities available in this field
- How diverse the cybersecurity industry is (# of career options)
- CAE's and that JHU, AACC, PGCC, HCC etc… are certified
- data about jobs in terms of the availability of STEM careers
- I learned there is a lot of scholarships etc available in this field
- unemployment rate for cybersecurity is 0%
- the number of pathways to cybersecurity jobs and the incredible increase and demand
- cyber careers & college link #11,13 and 14
- the number of career opportunities in cybersecurity
- CAE's (the impact these have on Service scholarships)
- that all computer positions/careers are considered part of the cybersecurity world
- the widespread uses of cyber security training

Please list one item you plan on sharing with your co-workers, staff, students and/or parents

- I will have the information I learned about cybersecurity and invite several of you / your guests to come speak to our group of students
- opportunities for women in computer science and the jobs in the future
- the handout cybersecurity: Which job is for me? Is excellent
- encourage faculty to host NICE for magnet students (math, science, computer science) and other interested parties
- speakers for their careers days
- Information on the upcoming competitions
- get students involved w/ these activities. Info on CAE's
- resources esp. demographics, school programs & sub fields w/in this field
- earning potential, competition opportunities, connections w/ professional speakers
- What a large, growing career path cybersecurity is (and high paying)
- cybersecurity pathways
- Nicole smith's info I will share with the faculty

- I plan to host a parent/child workshop, informing our parents how important cyber security is on the elem level as well as high school level
- Just below health care, STEM careers are the 2cd fastest growing occupation with computer as part growing at 23%
- new MD pathways, cert programs that are available and possible pathways/prep classes
- the student panel and Nicole's info
- college payoff and possible speakers for students
- careers and career paths
- CAE and materials from Nicole Smith

How could this workshop be improved? [indicates steps we will do to address]
- putting the info out when schools call the staff back after the summer before they plan the fall schedule --post copies of PPT and other information online so we can share at work
  - posted online all materials, links to resources and presenters PPT's
  - send out follow-up to attendees on where to find materials
  - try to set date now for next year's event and send out GC conference notice in early August
- maybe a demonstration of something in the areas covered
  - try to work in working session similar to cool careers and/or invite them all to the cool careers so they can learn more and see hands on
- Marc Nobles session should be in beginning take a look at George Mason's track for this field; it lays out/maps what courses are taken during what semester/what year to earn a BS in I mention this b/c the handout on "pathways to Cybersecurity Careers" mentions IT as a 2 and 4 year college degree. It helps answers the question "so what do I study?"
  - Consider the more formal technical talks to go towards beginning
  - Need handout or materials crafted to help folks see the pathways more clearly for ALL our partner instructions
- perhaps lengthen to 2 days
- More time with students for Q & A!
  - Make 1 ½ hour session
- I am less worried about my high fliers who would qualify for UMCP et al & more needing to know how to help the underachieving/hands on learners/gamer types
  - Include in guide mentioned above—pathways for 4 year and 2 year—multiple options as well as CTE track and cert tracks
- technical dictionary for acronyms
  - need a full guide
- be able to meet in smaller break out sessions ie. Each topic
- college information with students & also the diversity of careers in STEM for students
- I hoping this workshop can get out to more elementary school counselor and thruout Howard county in order to introduce and encourage our children to focus in this area
  - We already target Howard county so need to be a better job in advertising
  - Will send out follow up to all attendees sharing what we are doing (after school and summer programs and inviting to come to signature events as well as if they want a program at their school contact us
- be more specific as to exactly what HS courses should focus on and how to obtain curriculum for these courses

- - - include this in the guide will create
    - need the web materials posted and shared for the informal curriculum
    - for the across the curriculum content
    - the injections
    - the CTE track
    - other curriculum available
- perhaps make the "networking" lunch more formal
- too much tech in some areas, include tea bags with beverages, secure sponsor to provide carry bags and note pads, I'm glad Hopkins had bags so we could put all our stuff inside them, overall GREAT conference, very informative, good networking contacts
    - make a techie talk guide—acronyms guide
    - have at least one member institution come with bag give away
- I would like to attend a workshop geared towards introducing this field to elementary school students
    - Need a workshop for elem
    - Invite them to attend the cool careers and participate
    - Think about how to separate out into clusters first based on level and then perhaps grouping by county—ie ½ day focused on program development or a second session on program development
- I believe today's goal of making educators and counselors aware of all the STEM careers and opportunities available to their students were met!!
- Mr. Noble went on a tangent more applicable to folks already in the field
- greater emphasis on what educators can do to support students interested in the field or encouraging students that might be interested
    - make sure include fliers regarding our CWK12 events
    - send out fliers and add all attendees to listserve regarding upcoming events and programs

Please list any additional comments or suggestions below:

- Thank you for caring to share this workshop with others. I appreciated the information and the food.
- very informative and I want to be a hacker
- so what exactly is involved to become CISSP? Or, SSCP?
- More of an interactive event. Allow us to brainstorm/discuss and apply what we are learning
- has anyone applied personality typing (MBTI) & or Holland codes to subfields w/in STEM?
- thank you. It was wonderful
- enjoyed the student panel
- Perhaps offer county specific PD presentations for counselors, good outreach for advertising programs
- Probably not as many sessions. Marc Noble's session would have been received better earlier
- Also, if this workshop can be geared more toward elem and middle school as well, that would be great. At least we'd know and have resources at the school level to encourage them. I really enjoyed myself today, networking and having information that is relevant beyond the school system
- You are valued and appreciated.

- really liked seeing the numbers to back up claims thru Nicole's presentation, rick doten from LM also did an excellent job, esp enjoyed the student panel but need a ref guide for all the acronyms
- More opportunities are needed for elem school counselors to learn how we can incorporate this information into our programs so we can begin laying a foundation for our students.
- Excellent
- the food was very good
- This might have been the best conference I have every attended.
- Excellent!

Resources and Speaker Materials can be found at:
http://www.edtechpolicy.org/cyberk12/c3workforceguidance.html

Lessons Learned

The time of the year and the location work well. We should provide earlier reminders through the schools in early to mid August so educators can get on calendar. We do send out notices starting in late Spring, but considering the feedback we wonder if our mechanism is reaching "down deep" to the end users—those who attend. We will look into getting or creating a database of counselors and STEM coordinators at the LEA and possibly school level. We need to also tap home school associations and a wider net for private schools. This year we reached 10 of the 24 school districts in Maryland (plus DE, DC and MD private schools). Our 2012 goal will be to have all 24 LEAs in attendance. In attendance we had 22 high schools represented and 5 elementary schools (multiple representatives, district office and private and out of state made up half of attendees). Our goal in 2012 will be to have a representative from all out SECURE IT program schools (elem, middle and high).

Overall, the particpants enjoyed the workshop and found the materials and resources very useful and the presenters informative. On a 0-4 scale (4 being the highest positive scores) the average overall evaluation score was a 3.6. Scores for individual items (see evaluation summary) ranged from a low of 2.8 and a high of 4.0. Qualitative comments based on face to face comments, evaluation written comments and selected follow up questionnaire comments were more revealing. The particpants found the workshop "new and different", and were excited to hear about the multiple career pathways and options in this growing field. As several indicated, "we rarely have a chance to attend something like this." The cost (free) was greatly appreciated. All gave extremely positive feedback on logistics such as registration, directions, location and parking. Additionally, the food was a big hit. Overall, the particpants found the presenters knowledgeable, interesting and informative. The appreciated the materials and resources, especially those they could immediately share with their students and parents.

Participants also shared a number of things that could be improved for future events. See suggestions and ways to address listed above. In addition, three specific suggestions were emphasized. First, the need for both a guide with acronyms and a

guide indicating the pathways and options offered at our two and four year institutions. CyberWatch as a whole needs to do a better job in putting out this content. We will share insights with the CW leadership team and see if we can create some pathway materials FOR all our partnership members. There still seems to be a dilemma between what students' share they wished their counselors had known more about and what counselors want to know about. "I wish my counselors had known the possibilities" and "would have explained to me" were common comments. Student feedback indicate guidance counselors "often hear we like computers and so tag us for computer science or engineering. They don't have a clue what courses there are, what type of courses there are or what it even includes" "I don't think they even know that much of this you could take in high school or community college to get a jump start", "when I asked what these courses were they said I don't know you'd have to ask the college, so I choice something else until now". Somehow, we need to make guidance counselors aware of what the classes/courses include and cover (including a list of courses that can be found in a college catalog), and in a way that is less technical so that all can comprehend. Thirdly, the suggestion to have "active working sessions" will be explored for 2012. We will also explore the option to do a breakout session at a spring MSDE guidance counselor event.

Other suggestions included: having the technical presentation go towards the beginning, having breakout sessions for different levels (elem vs high school) and making sure we include coverage of our existing programs.

These comments clearly highlight the need for additional awareness workshops and activities. Additionally, to take a more active awareness campaign, PR and marketing materials, specifically related to careers options in this area will be developed to help bridge this knowledge gap. Possible materials include:
- Booklet with possible career overview
- Additional fliers and posters highlighting career options
- Bookmarks with career options and then areas of study and focus on clearance processes etc…
- Short YouTube type media explaining (PPT type)
- Short YouTube type media explaining (with people discussing)
- Short highlights of people in the field—how they got there etc…add to website
- Adding the preexisting presentation on online identity management and clearance processes to the website

In addition, the materials developed by the guidance counselors will be linked to the website and available for others to view and use. We should also consider opening with the CW presentation video http://www.cyberwatchcenter.org/CyberWATCH/ and perhaps including several of the movie trailers that we use with students throughout the workshop to help share the scope of the issue
- http://www.archive.org/details/Ncccd2009 Cyber Defense Competition Trailer
- NATO Trailer http://www.truveo.com/New-NATO-cyber-defence-centre/id/13338847
- Sneakers http://www.imdb.com/video/screenplay/vi2448753433/

- [Hacker http://www.youtube.com/watch?v=2efhrCxI4J0](http://www.youtube.com/watch?v=2efhrCxI4J0)
- [The Net http://www.imdb.com/video/screenplay/vi2046230809/](http://www.imdb.com/video/screenplay/vi2046230809/)
  - [NSA Commercial](#) -

http://www.nsa.gov/careers/Media_Center/index.shtml

Attention
Career Counselors
STEM Coordinators
Curriculum Specialists
You are invited to participate in a
special workshop sponsored by
National Science Foundation

Careers in Cyber Security Workshop

When: Tuesday, September 27, 2011
Time: 9:00 am-3:30 pm   Cost: none
Where: JHU Gateway Building, Rm 218-219 Columbia, MD

Deadline for Registration: Sept 20, 2009 - Online Form
http://www.edtechpolicy.org/C3Institute/GuidanceCounselor/2011/GCRegistration2011.html
(you must provide your transportation-refreshments and lunch will be served)

Note: This program is limited to 60 participants on a first-come, first-served basis.

Creer counselors are critical in the career choices of students. This 1 day workshop will introduce educators to IS/IA, Cybersecurity and Digital Forensics career opportunities, and choices within these categories, as well as, the multiple pathways to enter the workforce in these areas. Industry employers will speak to participants about career opportunities, student internships, externships and other related opportunities.

Counselors will learn about current and future career trends in the field, receive updates and current promotional materials for distribution to interested students and

Defense Careers
- Counterintelligence
- Linguists
- CISA, CISSP, SANS
- Database Analysts & Administrators
- Digital Forensics
- Forensics Investigator
- Systems Engineer
- Graphics Specialists
- Risk Management
- Network Security

parents, and discover how to use the CyberWatch Center Web site and staff to find answers to questions from parents, students, and other educators. Each counselor will also receive materials and handouts.

20 stipends @ $50.00 are available for **guidance/career counselors** through NSF (National Science Foundation) funding and will be arranged based on 1) first come first serve basis and 2) stipend participants will be asked to create recruitment brochures/ flyers based on workshop content that can be shared with students and parents. Stipend awardees must attendee the short stipend briefing— immediately after the workshop.

Tentative Topics:

- 2 & 4 year options
- NSA DHS Framework
- Student perspective
- Connection with STEM
- SANS Institute
- US Employment Report
- Resources and much more!

For More Information:
Davina Pruitt-Mentle, Ph.D.
(NSF CW K12 PI)
301 503-8070 dpruitt@umd.edu

Richard Scott/Michael Linkins
(MSDE School Counseling)
rscott@msde.state.md.us
410 767 0288
mlinkins@msde.state.md.us
410 767 0769

The Goals of the Careers Workshop are to:

- Increase educator awareness of the workforce needs of the United States in IS/IA and related fields (digital forensics, homeland security, network security, systems administrator, cybersecurity) and requirements (clearances) including 2 and 4 year and certification tracks.
- Increase the knowledge of educators about CyberWatch Center and its benefits to students and the future technology workforce.
- Share the connection between the CyberWatch program and post-secondary success at partnering colleges and universities.

Careers in Cybersecurity
Workshop Tentative Agenda

8:45 AM	Check in
9:00 – 9:15	Welcome
	Davina Pruitt-Mentle, PhD – CyberWatch
	Michael Linkins, MSDE
9:15 - 10:00	Cyber Security Need: A National Growth Career
	Davina Pruitt-Mentle, PhD – CyberWatch
10:00 -10:45	The National Cybersecurity Framework
	Understanding Cybersecurity Functional Titles, Roles and Responsibilities
	Peggy Maxson
	Director, National Cybersecurity Education Strategy
	Department of Homeland Security
10:45 - 11:00	BREAK
11:00 - NOON	Educational Options
	Panel Discussion & Open Forum
	Dr. Blair Taylor, Department of Computer and Information Sciences, Towson University

Kelly Koermer, Dean of the School of Business, Computing & Technical Studies, AACC
Rick Doten, Chief Scientist, Center for Cyber Security Innovation, Lockheed Martin
John Baker, Carey Business School, The Johns Hopkins Carey Business School

12:00-12:45	**Lunch and Networking** Visit 2 and 4 year institutions and industry booths

12:45 – 1:30

Student Viewpoint
Panel Discussion & Open Forum
Brandon Dixon (2+2+2 Pathways model)
Rose Kirby (Women in Cybersecurity)
Brian Zhang (Freshman HCC)

1:30- 2:15

The College Payoff
Nicole Smith, Senior economist
The Georgetown University Center on Education and the Workforce

This report examines the most recent report regarding lifetime earnings for all education levels and earnings by occupation, age, race/ethnicity and gender.

2:15- 2:50

Decoding the Information Security Profession
Marc Noble, CISSP-ISSAP/Director, Government Affairs (ISC)[2]

2:50- 3:00

Decoding the Cyber Defense and other Cool Competitions
Cyber Patriot, Cyber Foundations, High School Networking Security Competition, BPA and FBLA
CyberWatch Center Resources/Closure

Briefing for Stipend Participants
Davina Pruitt-Mentle, CyberWatch

Directions on Next Page

http://webapps.jhu.edu/jhuniverse/information_about_hopkins/visitor_information/how_to_get_here/columbia_center/index.cfm
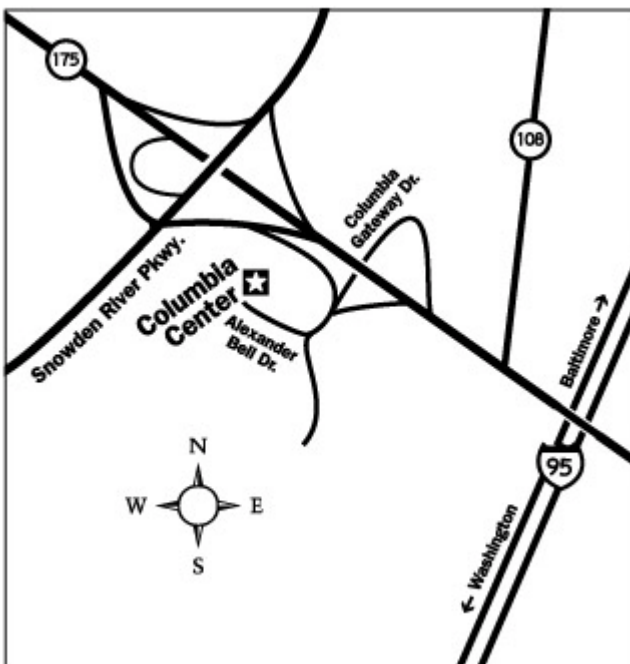
From Baltimore

Take I-695 to exit 11 (I-95 South). Go south on I-95 to MD 175 West (Columbia). Follow MD 175 .8 miles through one traffic light to Gateway Drive on the right. Take Gateway Drive .4 miles; turn right onto Alexander Bell Drive. Go .3 miles to 6740 Alexander Bell Drive (the last building).

From Washington

Take I-495 to exit 27 (I-95 North). Go north on I-95 to MD 175 West (Columbia). Follow MD 175 1.5 miles through three traffic lights to Gateway Drive on the right. Take Gateway Drive .4 miles; turn right onto Alexander Bell Drive. Go .3 miles to 6740 Alexander Bell Drive (the last building).

From Route 29

From Route 29, exit onto MD 175 East (toward Jessup) and follow MD 175 for approximately 2.7 miles to the Gateway Drive/Snowden Parkway Exit. Stay in the middle lane of the exit ramp and follow the signs for Columbia Gateway (you will merge to the right after you cross the intersection with the first traffic light.) Continue in the right lane and turn right on Alexander Bell Drive at the next traffic light. Go .3 miles to 6740 Alexander Bell Drive (the last building).

Parking

Ample free parking is available.

Hotel Ideas
Homewood Suites by Hilton Columbia
8320 Benson Drive, Columbia, MD
Hilton Garden Inn Columbia
8241 Snowden River Parkway, Columbia
Courtyard Columbia
8910 Stanford Boulevard, Columbia, MD