CYBERSECURITY TRAINING: Bridging the Gap from Policy to Practice

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December 6, 2017
“Tell me and I forget. Teach me and I remember. Involve me and I learn.”

~ Benjamin Franklin
About Mari

- Vulnerability Engineer, Las Vegas Sands Corp
- 9+ years in IT and Cybersecurity
- Certifications - CISSP, GIAC (various), CEH to name a few
- Hobbies: Arts & Crafts, Baking, geeking out!
About Lisa

- Founder/CEO Women’s Society of Cyberjutsu
- 18+ years in cyber, Military vet
- Tech and gadget lover
- Hobbies: soccer, painting, eating
About Marcelle

- Threat Researcher, LookingGlass Cyber Solutions, Inc.
- Co-founder and CEO, Fractal Security Group, LLC
- Cybersecurity trainer - academia and contract
- Compulsive volunteer - WSC, ISACA, ISSA, NIST
- Certifications - CSX-P, GCIA, GPEN, CISSP, to name a few
- Cyber competition enthusiast
About Women’s Society of Cyberjutsu

• 501c(3) nonprofit passionate about helping and empowering women to succeed in the cybersecurity field.

• Cybersecurity community-organization

• Offer workshops/classes/study groups, networking events, conference group attendance, job board, volunteer opps

• Cyberjutsu Girls Academy - Girls in STEM program for MS girls
Training Topics

- Cybersecurity Basics
- Network Security
- Command Line Fu
- Digital Forensics
- Penetration Testing
- Python Programming
- Building a Home Lab Environment
- Certification Prep
Curriculum Development

- Experiential learning or “hands-on-keys”
- Emphasis on critical thinking
- Encourage questioning and exploration
- Real world examples and applications
- Don’t be a “sage on the stage”
Dale Cone of Learning

The Learning Cone (Edgar Dale 1969)

- **Verbal Receiving**
  - After two weeks, we remember 10% of what we read.

- **Hearing**
  - 20% of what we hear.

- **Watching**
  - 30% of what we see.

- **Watching a Video**
  - 50% of what we see & hear.

- **Participating**
  - Getting involved in discussion, 70% of what we say.

- **Doing**
  - Presenting / simulating real experiences, 90% of what we say & do.
Kolb Experiential Learning Cycle
Socratic Method

"I cannot teach anybody anything, I can only make them think."

~Socrates
Participant Experience Levels

100 < 2 years sec exp. / some IT

200 < 4 years sec exp.

300 > 4 years sec exp.

Level 100 courses are designed for students with little to no previous IT Security experience, or no experience in the topic(s) being covered. These courses are meant to be introductory level, or provide the training for entry level certifications.

Level 200 courses are designed for students with some security experience, looking to advance or learn in new topics.

Level 300 courses are designed to offer expert level courses and training on specific topics. Typically, a general understanding and knowledge of the topic being presented is an expected prerequisite.
Hands-on-Keys

- Workshops
- Study Groups
- Competition Practice
Example: Hands-on-Keys
Example: Hands-on-Keys

1 #!/bin/sh
2 # scripting project
3 # print working directory
4 pwd
5 cd ~/Documents
6 echo "Scripting is Fun!" > script.txt
7 cp scripting.txt new.txt
8 mv new.txt ~/Desktop
9 netstat -ano | grep -i list
10 # cat network.txt | grep -i list
Example: Hands-on-Keys
Device type: phone|general purpose|webcam|storage
-misc
Running: Google Android 2.X, Linux 2.6.X, AXIS embedded, ZyXEL embedded
OS details: Android 2.2 (Linux 2.6), Linux 2.6.14 - 2.6.34, Linux 2.6.17, Linux 2.6.17 (Mandriva), 2.6.32, AXIS 210A or 211 Network Camera (Linux 2.6.17), ZyXEL NSA-210 NAS device
TCP/IP fingerprint:
OS:SCAN(V=7.01%E=4%D=12/4%O=4%T=%CT=1%CU=31136%PV=Y%
Example: Hands-on-Keys

Easy phishing: Set up email templates, landing pages and listeners in Metasploit Pro -- learn more on http://rapid7.com/metasploit

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metasploit v4.11.7-
+ 1518 exploits - 877 auxiliary - 259 post
+ 437 payloads - 38 encoders - 8 nops
+ Free Metasploit Pro trial: http://r-7.co/trymsp
```
Example: Hands-on-Keys
Remote Participation

- Attend from home
- LMS - Canvas, Moodle, etc.
- Connect - Webex, JoinMe, etc.
- Features live chat with instructor and/or assistant
- Recorded for later viewing
Cybersecurity Workforce Framework

NIST Special Publication 800-181
Questions?

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Resources:  https://goo.gl/iUr4H7