Multidisciplinary Experiential Learning for Holistic Cybersecurity Education, Research and Evaluation

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Walk Through

• Experiential Learning (EL)?
• CTFs & EL for Criminology/ Criminal Justice
• Multidisciplinary EL
What is Experiential Learning (EL)?

CTFs & Experiential Learning for Criminology/Criminal Justice Students
1. Experience

Research
- Design
- Implementation
  - Conduct Interviews & Observations

Cyber attack/security
- Experience “real-time” attack-defense
REFLECT

Research
- Research Experience
- Doing Research
- Self/Group Challenges

Cyber attack/security
- Adversaries/Defenders
- Attack techniques
- Organizational Dynamics

1. Experience
2. Share
3. Process
4. Generalize
5. Apply
APPLY

Research
- Stronger skills
- Other CTFs

Cyber attack/security
- Dynamic /Complex Attack-defense
- Adaptive trajectories
- Group traits

5. Apply
4. Generalize
Challenges: Difficulty & Clarity

1. Experience

- Newcomers
- Frustration
- Detrimental

2. Share

3. Process

4. Generalize

5. Apply
Challenges: Time

1. Experience
2. Share
3. Process
4. Generalize
5. Apply

- Fatigue
- Departs from reality
Multidisciplinary Experiential Learning (MEL): Benefits, Challenges & Possible Solutions
MEL: Why is it important?

• It’s already practiced & valued
  – Limited integration of hard & soft sciences
  – Holistic Research on Cyberattacks and Cybersecurity

• Cyberattacks/security
  – Breaking down disciplinary barriers
  – Innovation
  – Enhancing learning experience
  – Improving validation and transparency
MEL: Challenges

• CTF Logistics
  – Different discipline-specific EL
• Pre/Post Interactions
  – Fatigue, frustration, discomfort

Possible Solutions
• Hybrids
• Prior Meetup
• Pre/Break/Post Interactions
• Audio/Video Recordings
Upcoming MEL Work

• Multidisciplinary Team (August 2015 -)
  – Graduate & undergraduate
  – CS; ECE; CCJ
  – Innovative Research & Education
    • Communicate Across Disciplines!
Upcoming MEL Research

• Red/Blue + CTFs (September 2015-)
  – Group Dynamics
  – Adaptive Decision-Making
  – Attack Trajectories
  – Dynamic/Proactive Defense
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Thank you
Comments/Questions?

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