2024 CAE Community Symposium

Case Study: Using the NSA CAE RING materials with a high school STEM cohort

Stan Mierzwa, POC – Kean University

STEAM – Summer STEM Program

- Funded and established by the Port Authority of NY/NJ.
- Four-week program on STEM (Math; Global Business Supply Chain; Cybersecurity).
- Three cohorts of students from underserved communicated (Jersey City; Elizabeth; Newark – NJ).
- Students spend four days each in a subject area and then circulate.
- High school students.

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CAE-CD Community Thank you!

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- First, I have never taught high school students – other than coaching basketball and soccer.
- Second, I wasn't sure where to start with getting age appropriate cybersecurity materials.
- **Enter: CAE-CD Community – thank you to Stan Kostka and Mike Qaissaunee for introducing me to the materials made available from the RING team.**
- **Thank you to Prof. Jesse Hairston – Univ. of Alabama Huntsville for granting me access to the materials. I only had 3 weeks to get ready.**
- **High 5 to the CAE –Community!!!**

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RING Materials Utilized

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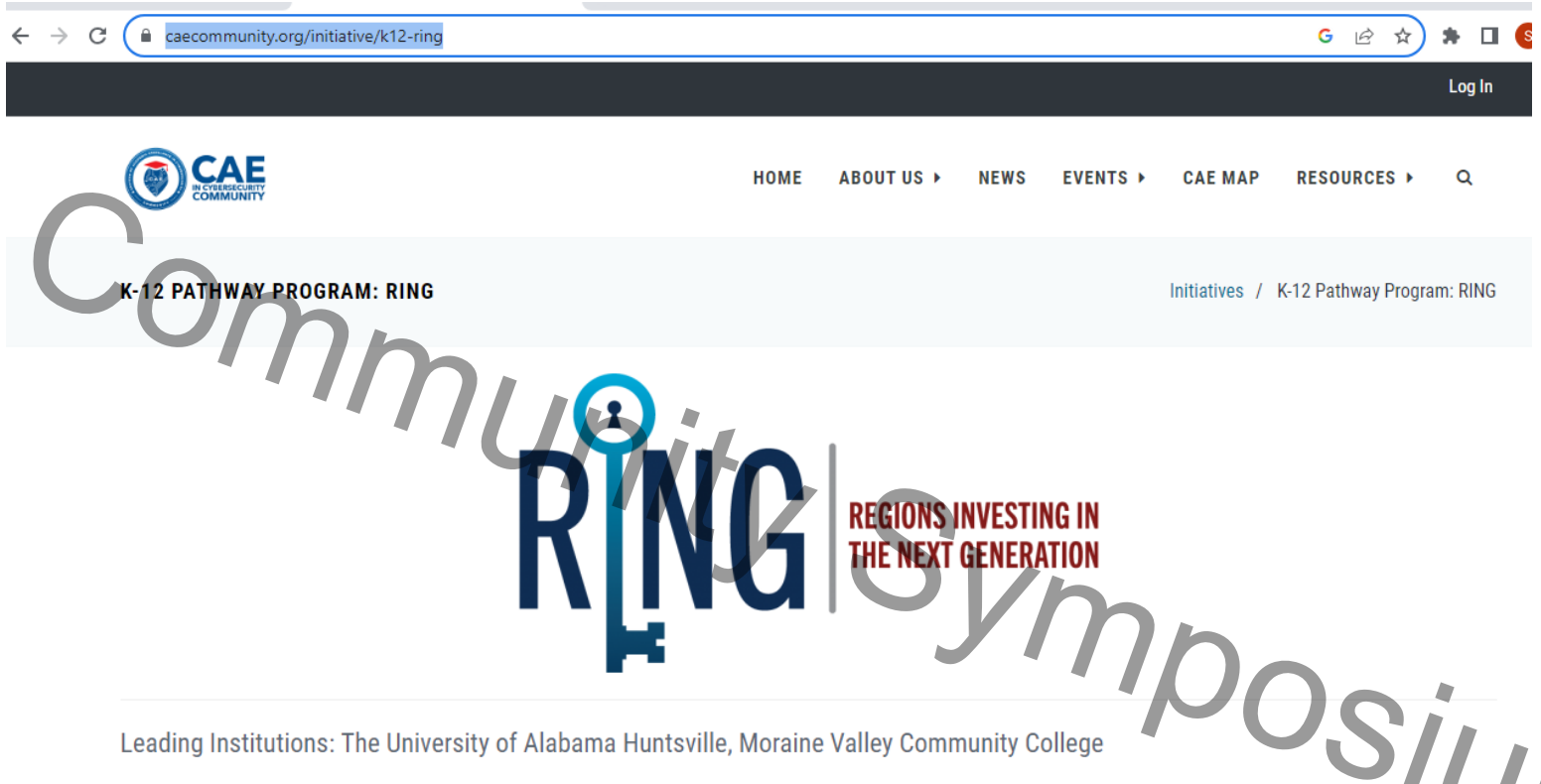
RING Modules

Unit 0: Introduction Content List	Unit 1: Ethics Content List	Unit 2: Establishing Trust Content List	Unit 3: Ubiquitous Connectivity Content List	Unit 4: Data Security Content List
Unit 5: Introduction to Python Programming Content List	Unit 6: System Security Content List	Unit 7: Adversarial Thinking Content List	Unit 8: Risk Content List	Unit 9: Implications Content List

RING Materials Utilized



https://caecommunity.org/initiative/k12-ring

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RING Materials Utilized

- Provided access to Canvas class.
- Ability to use directly in Canvas or download
  - Student/Teacher versions.
- Lesson Plans, Slides, Vocabulary Organizers, and Activities.
- Comprehensive materials.
- Introductory students – many with NO background in cybersecurity.

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RING Materials Utilized

- Selected the following lecture materials
  - Cybersecurity and why it matters?
  - Cybersecurity & Ethics
  - Trust Computing
  - Ubiquitous Computing
  - Data Security
  - Python Programming
  - System Security

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RING Materials Utilized

- Activities – labs, assignments (examples)
  - EXIF Extraction (drum up curiosity)
  - Caesar Cipher
  - CIA Triad
  - DDoS Attacks
  - Linux Command Line
  - Bits & Bytes (binary conversions)
  - Locate IP and MAC address
  - Traceroute
  - DNS – what and how?
  - Basic Programming Concepts (eMates)

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RING Materials Utilized

- Activities – labs, assignments (examples)
  - Phishing Test
  - CIA Game
  - Python Programming
- End with a poster
  - Aligning cybersecurity to the transportation sector (Port Authority)

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Do's and Don'ts

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- Refer back to their worlds – IG, SC, YT.
- Use lots of labs and experiments – Do!
- Let them work together – cyber is a team sport.
- Play LoFi music while working on labs.

- Talk too much – 15 mins max!!
- Underestimate their knowledge.
- Don't settle, new approaches will evolve.
- Go at it alone.

Student Feedback

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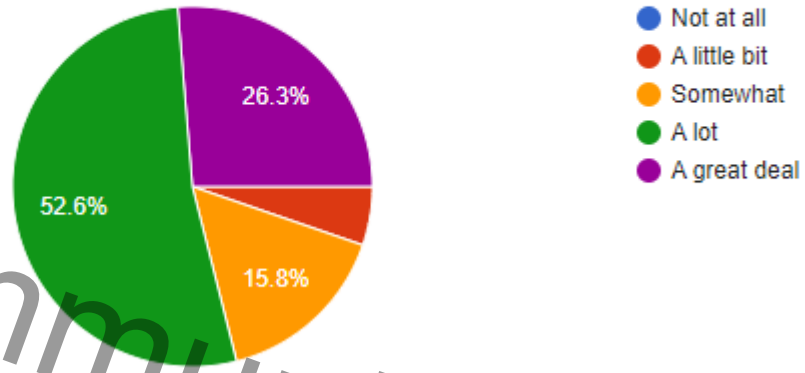
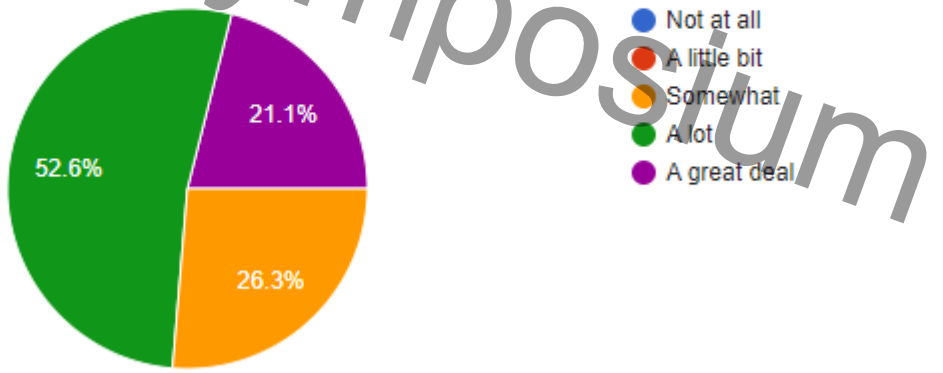
How much did you enjoy this class?

19 responses



How well did the cybersecurity materials help you learn and improve your knowledge on the topic?

19 responses



Student Feedback

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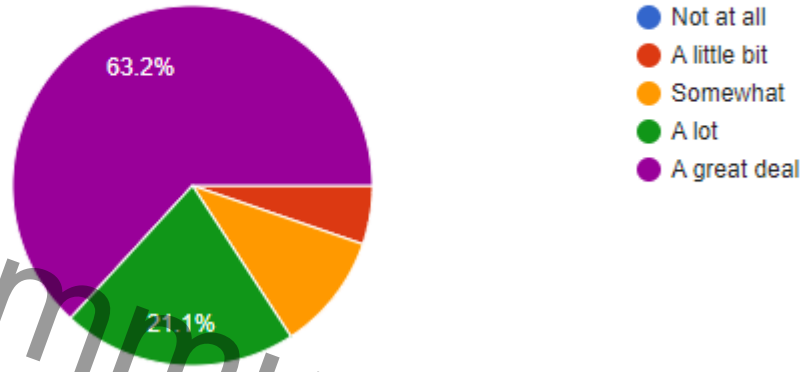
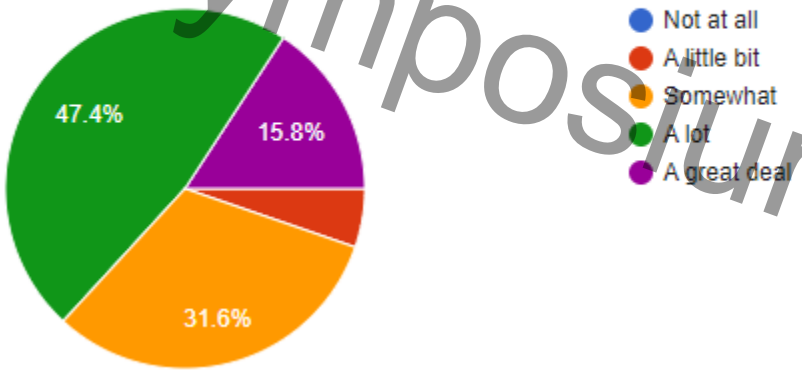
How clear and organized what the teacher's teaching style?

19 responses



How engaged and interested were you in this class?

19 responses



Student Feedback

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What were some of your favorite activities about the class?

19 responses

- writing our own python scripts
- python
- The game we played
- Labs
- linux !!!
- Programming
- Binary code, encryption and coding on dos
- Working in teams
- The game and the programming

Student Feedback

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What were some of your favorite activities about the class?

19 responses

I liked the little game and worksheets we got to do together with each other.

Doing the bot language/101010

Nun

the website command

My favorite was learn python and python sandbox.

I liked how we actually got to work and do labs rather than just listen to lectures.

The phyton assignment

Supply chain

The Cesar Cyphers and rbe binary conversion worksheet was very engaging and fun. The puzzles in general were very interesting to do

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Thank you!

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The
GALTHOUSE
LEGENDARY
LOUISVILLE
Swizzle
WALKER'S
EXCHANGE

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