Why Cyber is STEM

Digital Technologies Hub webinar
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About Steve

- Background
  - ITM, Accounting, Psychology
  - University 13 years
  - 10 years secondary @ Loyola Blakefield
- Start with why
- Enhance and Complement
- Foundations and Fundamentals
- Our Opportunity and Responsibility

What is Cyber?

Cyber Science *is an interdisciplinary field of study developed at the intersection of cyber technology and human behavior, which impacts the world's leading industries, like mobile, energy, healthcare, and finance*

Poll Questions

1. Were you trained as a CS/IT/Computing Teacher?
2. Have you previously taught Cyber?
3. What tools do you currently use in your classes?
   – Scratch, Hour of Code, Code Academy, Robotics, Raspberry Pi, Kodu, Code.org

School Structure

- 180 total school days per year
- Students have nine 40 minute periods per day (including lunch)
- School day from 8am to 3pm
- Core classes meet every day – Math, English, Science, History, Theology,
- 3 year requirement of modern language (Spanish or Italian)
- Arts Core (1 cr Fine Art) (History of Art, Music Appreciation, Core)
- 1 core credit of computer science at high school level

Current Course Progression

- Year 6 (13yrs) (Core) Intro to Computers 1 semester
- Year 7 (Core) Scratch Projects 1 semester
- Year 7 Elective Intro to Coding 1 semester
- Year 8 Elective Coding II 1 semester
- Year 9 (Core) Foundations of CS - Full Year
- Years 9 to12 Elective - Ruby, Python – Full Year
- Years 9 to12 Elective - Cyber Science – Full Year
- Years 11 to12 – Elective AP Computer Science (JAVA)

Foundations & Fundamentals

- Items for Cyber Science
  - How and Why things work
  - Logic
  - OSI (networking)
  - Operating Systems
  - Secure Coding
  - Encoding and Encryption
  - Cyber Hygiene (not the silicon unit on the desk, but the carbon unit in the chair)

Basic Example

- Cyber Camp for Year 6 & 7
  - Decoding messages

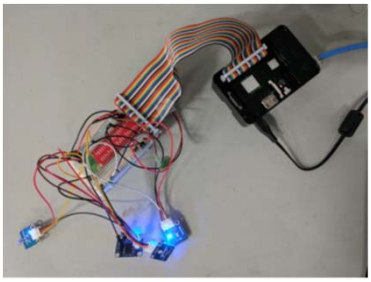
?em daer uoy naC
Can you read me?

Frr fcbg eha
See spot run -ROT13

... . . / -.-- --- ..- / - ..- . ... -.. .- -.—
See you Tuesday - Morse Code

Advanced Example

- Raspberry Pi Industrial Control System Lab



Lab Setup

- ICS Sensors
  - Light
  - Temp
  - Pressure
  - Camera
- Trust in the environment

Cyber Concepts
Year 9 +

- Hardware
  - Device Drivers
- Linux commands
- Operating System
  - Stability
  - Reliability
  - User Account Control
- Network Stack
- Web Server
- Custom Code
  - PHP
  - Python
  - HTML
  - JAVA Script

Custom Front End

Resources for you and your students

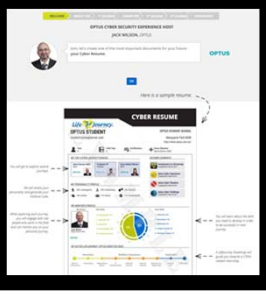
- Students:
- https://dayofstem.com.au/

What is the Day of STEM?

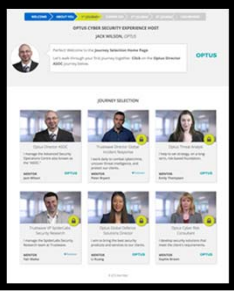
- Day Of STEM is a national initiative designed to build awareness and inspire Australia's STEM/CYBER generation.
- Free, self-guided, interactive, virtual,mentoring, experience for students, teachers, parents and schools.
- Designed for students Year 7 - University.
- Enables students to test-drive their futures by living a day in the life of Australia's STEM mentors.
- The Day of STEM consists of 8 uniquely themed programs that are designed to be completed within 60 minutes in school or outside the classroom.
- Day of STEM is implemented by LifeJourney, a U.S. based technology company with a growing Australia team.

Program 4 - Optus Cyber Security Experience

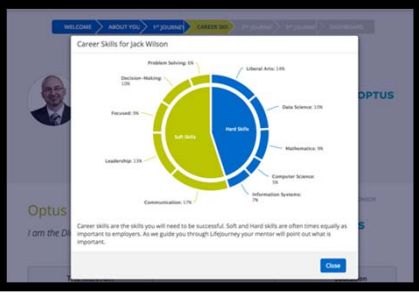
Introduction of the Cyber Resume…



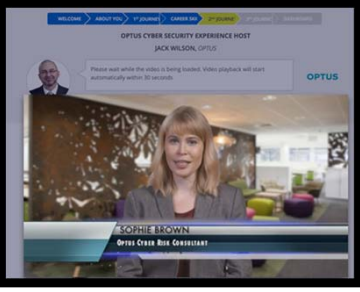
First mentor selection …



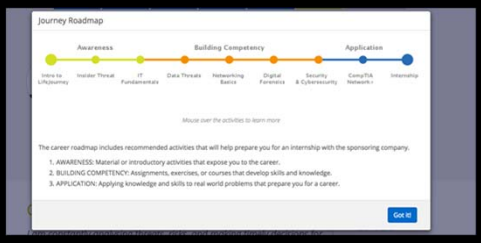
Career skills breakdown for Jack Wilson…



Sophie Brown mentor trailer…

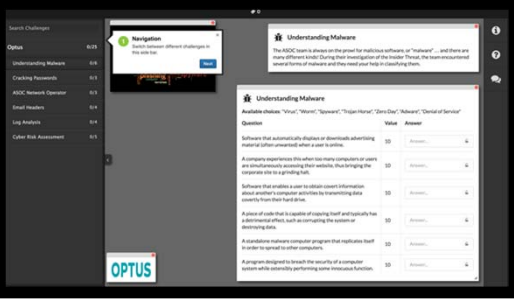


Career Roadmap…



Cyber Situation…

Cyber challenges - build your cyber skills…

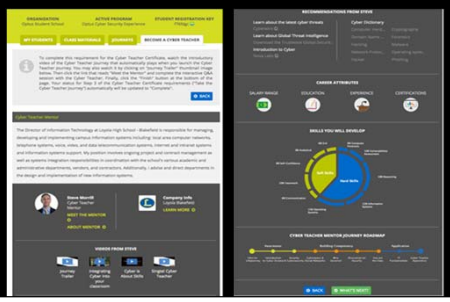


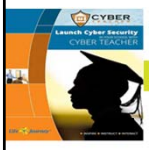
Resources - Students

- CompTIA Series
  - Network +
    - Year 8 and up
  - Security +
  - Internationally recognized industry based certification
  - Employment Requirement (Internships)

Resources - Faculty PD

Step 3 - Take the Cyber Teacher Mentor Journey

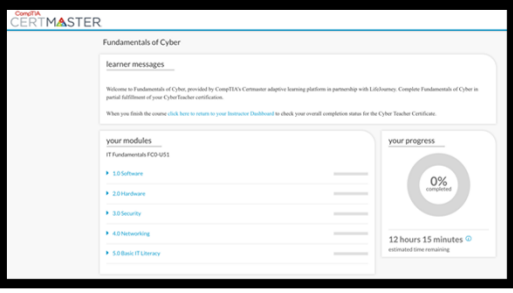




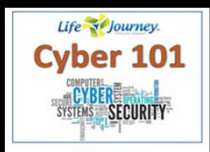
Teachers Develop Cyber Security Knowledge & Learn How to Introduce Cyber into the Classroom

Example Uni course mapping

Step 4 - Fundamentals of Cyber Online Course



Cyber Challenges Overview & Guide



Cyber Challenges

Overview

Beginner Cyber Challenge

Inspiration

What's Next?

- Don't be afraid to try new things
- Learn with your students – students can do more than we think they can
- Find an industry cert in your area of interest
  - Net +, Sec +, CCNA