Building Classrooms of the Future: Cybersecurity Career Discovery

Presentation for NICE K12 Conference
Monday, December 9, 2019

CFF Mission:

To unite business, community, and educational leaders in creating innovative learning environments in San Diego County public schools that prepare our students to thrive in a competitive global society.

What is CFF Known For?

- **The convenor of business, community, and educational leaders in San Diego County around innovation in education**

- **A catalyst and champion for the creation of learning programs that apply proven business and technology-based practices in the school setting**

- **A trusted resource for school districts, and a thought leader on innovation in the classroom**

CLASSROOM OF THE FUTURE
inspire.innovate.achieve

Need

- **Nearly a third of students nationwide leave high school without the required skills to succeed in college or participate in a 21st century and beyond workforce**

- **There are 43,000 young adults in San Diego who are neither working or in school**

- **Employment in STEM jobs is expected to grow to more than 9 million by 2022**

- **There is a tremendous lack of career exploration at the elementary and middle school levels**

Opportunity

- **San Diego is home to 7,600 cyber jobs, generating $1.9 billion in economic impact for our region**

- **The cybersecurity industry is expected to grow by 13%**

- **San Diego is positioned to be a global hub for cyber innovation**
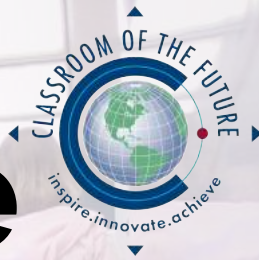
Program Overview

Program Objectives

- **Students will gain exposure to the world of work in a San Diego County priority industry sector.**

- **Students will understand the historical perspective of information security.**

- **Students will gain a greater understanding of the technical and essential skills needed to succeed in the information and cybersecurity industry.**
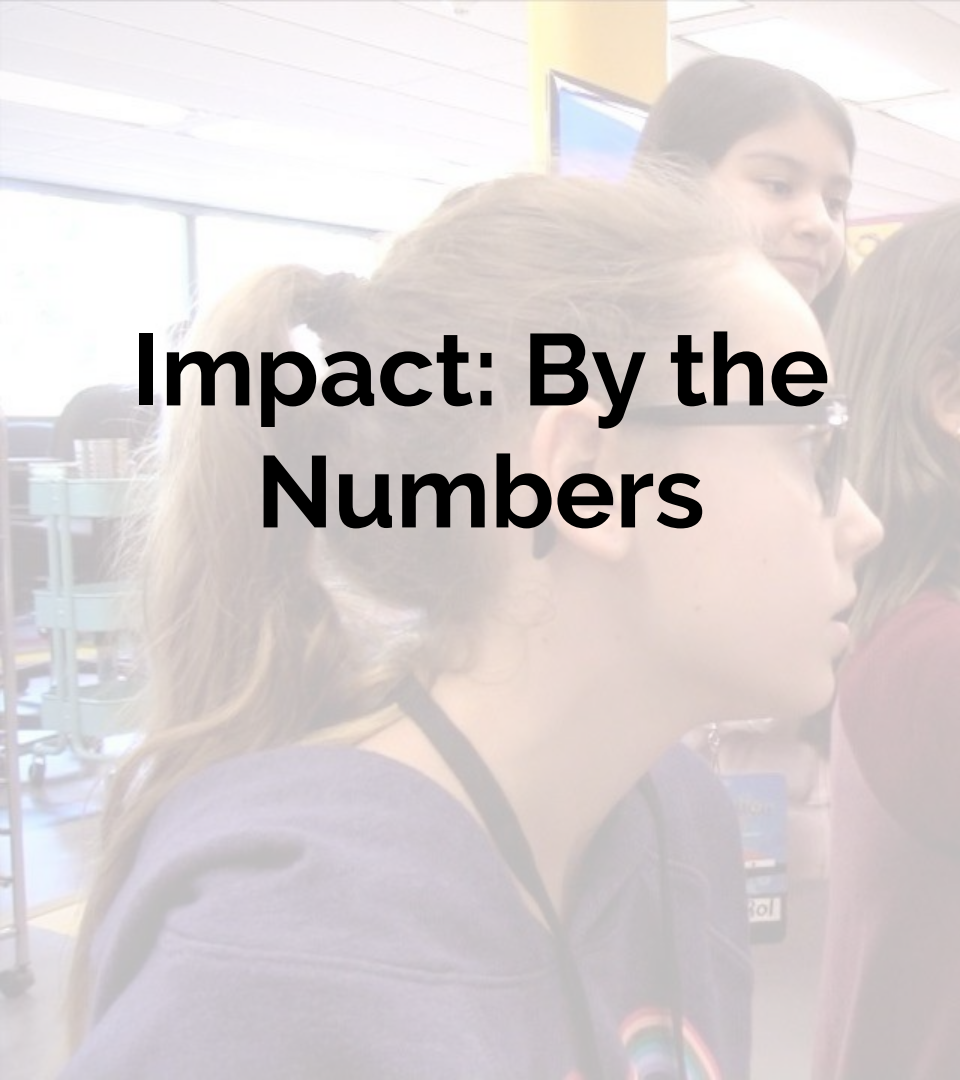
Highly Collaborative Program

CLASSROOM OF THE FUTURE
inspire.innovate.achieve

USS Midway MUSEUM

Journeys

nepris

san diego county office of EDUCATION
FUTURE WITHOUT BOUNDARIES™

CYLANCE™

Nth GENERATION

Nordson

Capital One®

CIRCADENCE

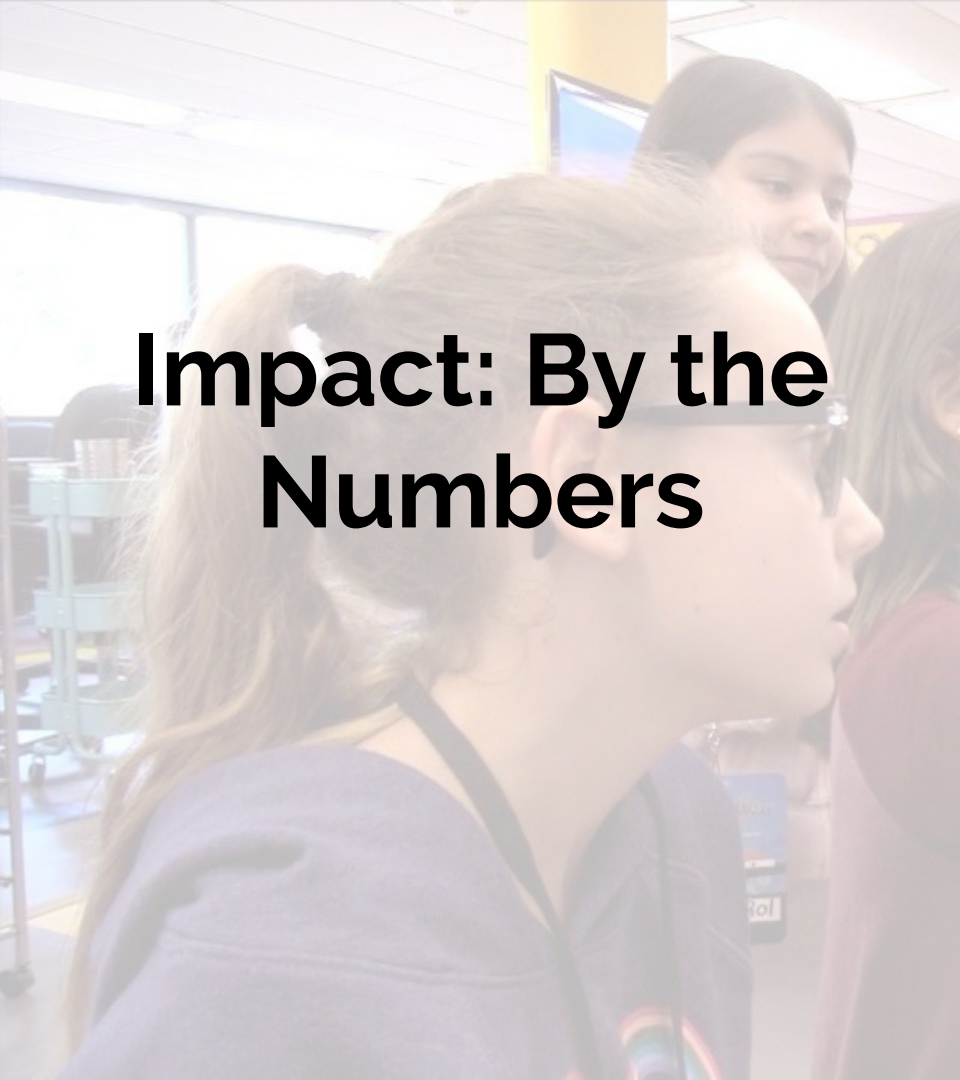BEST BUY

Program Highlights

- **Flexible 6 week cybersecurity career exploration program**
- **Classroom lessons & experiences**
- **Career exploration through** *Journeys*
- **History of information security** USS Midway MUSEUM
- **Virtual and face-to-face experiences with cybersecurity workforce** nepris

CLASSROOM OF THE FUTURE
inspire.innovate.achieve

Impact: By the Numbers

- **875 students**
- **5 cohorts**
- **16 schools**
- **9 school districts**

Impact: By the Numbers

- **94% of students learned a little or a lot about cybersecurity**
- **Increases in essential skills**
- **Nearly 50% of students have changed their college and career plans**

Curriculum Review

Teaching Strategies, Websites & Technology

You will be using the following teaching strategies in this curriculum

Close Reading

Collaborative Conversations

Asynchronous Discussion

Jigsaw (modified)

Venn Diagram

Interactive Listening (podcast)

You will need the following technology:

Chromebook, laptop or tablet (with camera/ video capability)

Internet access

You will be using the following websites, products and technology resources in this curriculum.

New Google Sites (curriculum site)

Quizlet

EdPuzzle

Penzu

Piktochart

Google G Suite (Documents, Drawing, Slideshow)

Journeys Map (Career Exploration Map)

FlipGrid (Video Response platform)

Podcast (ListenWise)

Padlet (optional)

Socrative (optional)

Week 1: What is Cybersecurity?

- ## Introduction to cybersecurity
- ## Industry environment
- ## Key vocabulary

Purpose

Content: You will learn best practices for staying safe online and be introduced to computer science principles and the architecture of online networks. This through a fun and engaging *Cybersecurity Lab* from NOVA Labs.

Language: You will synthesize your learning by successfully navigating through the NOVA Labs Cybersecurity Game.

Social: You will engage in collaborative online activities and face-to-face interactive experiences.
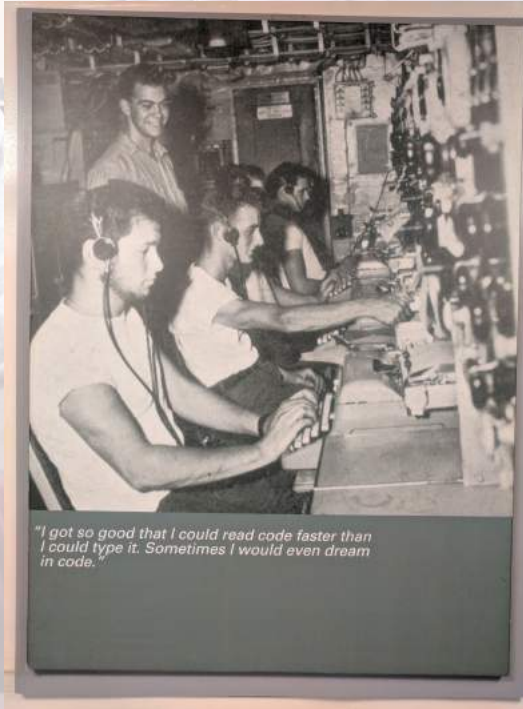
Week 2: History of Information Security

Focus on early information security practices
- **Coding and Encryption**
- **Evolution of coding systems (smoke signal, mirror, flags, knots tied on a string, paper with disappearing inks)**
- **Navajo Code Talkers**

Standards-aligned reading developed by USS Midway docents

Purpose

Content: You will learn about the history of communication security before the Internet.

Language: You will synthesize your learning by creating a Venn diagram comparing the history of communication security and current cybersecurity measures.

Social: You will engage in conversations with USS Midway Communication Security Experts.

WHY
?

"I got so good that I could read code faster than I could type it. Sometimes I would even dream in code."

Week 2: History of Information Security

Visit to USS Midway Museum (or NEW curriculum videos)

- **Battle of Midway Exhibit**
- **SINS Room**
- **E-2 aircraft**
- **flight deck area where signal flags, flashing light technology and communications antennas may be observed**
- **Command and control centers such as Tactical Flag Command Center (TFCC)**
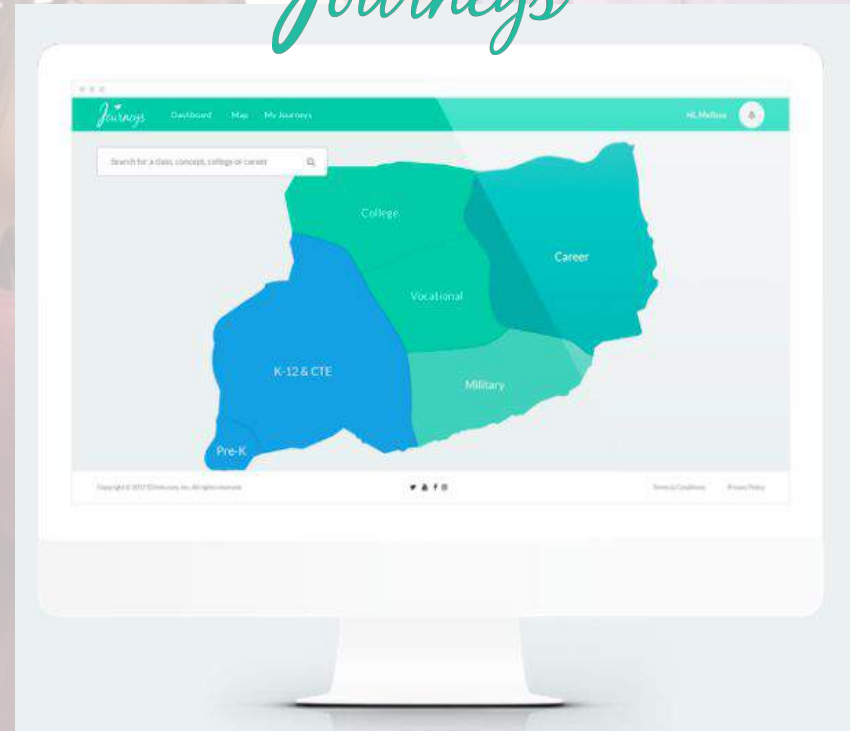- **Combat Information Center (CIC)**

Week 3 & 4: Classroom Exploration

Career Exploration Lessons
- **How Much Money Will You Need?**
- **Journeys Interest Survey**
  - **Career options on Journeys map**
  - **Priority industries in San Diego**
  - **Information & Cybersecurity jobs**
  - **Skills, education needed for a career in information and cybersecurity**
- **Essential Skills**

Week 3: How Much Money Will You Need?

Purpose

Content: You will learn about the cost of living based on the lifestyle they want lead and how much it will cost. You will learn about potential career opportunities based on their interests.

Language: You will synthesize your learning into a 90 second oral reflection.

Social: You will engage collaboratively using Flipgrid, a video collaboration Web tool.

Week 4: Knowledge, Skills, and Abilities

Purpose

Content: You will learn about the knowledge, skills, and abilities you need for a career in cybersecurity and the variety of paths you might take to get there.

Language: You will synthesize what you learned using Google Presentation as an online discussion space.

Social: You will engage in a collaborative conversation to reflect on and deepen your understanding.

OUR VISION

Help lifelong learners discover the skills and knowledge they need by visually mapping multiple pathways from any starting point to goal completion.

Journeys Map is the Google Maps™ for academic and career aspirations.

ACCESS FOR ALL

Provide every individual with free lifelong access to Journeys Map so they can pursue success in life.

CYBER CUSTOMIZATION

The Journeys Map platform has been built to act as an infrastructure layer to deliver an experience tailored to specific interests or industry. We welcome third party innovation feeding into the platform, as well as building on top of it.

Sources of data and resources that currently feed into the platform in support of this include:

CYBER SECURITY MAP

Skills and interest assessments are available for users to discover their strengths and best fit

Explore cyber careers of interests through Journeys Map unique career cards or interactive map

Cyber careers are paired with comprehensive dashboards that feature cyber info and localized job opportunites

Create personalized pathways to cyber opportunites with turn-by-turn directions

Week 5: Meet & Learn

Classroom visit by cybersecurity industry leaders or virtual chats via **nepris**
- **Hands-on classroom activities with leaders**
- **Online simulations**
- **Face-to-face Q & A**
- **Information security, digital forensics, digital & information citizenship/literacy**

Purpose

Content: You will learn about the field of cybersecurity from a cybersecurity expert.

Language: You will ask questions to your expert during our virtual session.

Social: You will engage in both face-to-face instruction and virtually with a cyber industry expert.

Why Isn't Industry Engagement A Part of Every Classroom?

- Geographic barriers

- Too time consuming

- Can't match professionals skills to curriculum needs

- Lack of access to diversity of career pathways

- Lack of a universal platform that enables teachers and industry experts to collaborate effectively

nepris

Nepris Solution

Teachers & Learners

Find, Match, Connect, & Engage

Industry Professionals

GLOBAL
PATH///AYS
INSTITUTE

"The single biggest factor in enhancing career development of young people is engaging business and industry in the classroom."

Bill Symonds – Global Pathways, Arizona State University

Engagement Models

1

Live
Personalized
Sessions

2

Live
National
Industry Chats

3

Nepris
Video
Library

4

Career
Explorer

nepris

Week 6: Culminating Project

- **Students present cybersecurity project, synthesis of learning to panel of experts in-person or via Nepris**

Purpose

Content: You will learn how to synthesize your learning using Piktochart or other infographic creation tool.

Language: You will synthesize your learning of this cyber unit by creating an infographic

Social: You will engage in conversations with USS Midway Communication Security Experts

Evaluation & Metrics

- **Student pre-survey**
- **Student post-survey**
- **Teacher survey**

- **Understanding about industry**
- **Essential skills**
- **Motivation**
- **Confidence**

CLASSROOM OF THE FUTURE

inspire.innovate.achieve

Q&A

Link to this presentation: http://bit.ly/CFF_NICE2019

Interested in the "Career Discovery: Cybersecurity Experience" curriculum? Contact: James Wright, Classroom of the Future Foundation james@classroomofthefuture.org

Thank You!

Mary Kraus
Cybersecurity Program Manager
Classroom of the Future Foundation
mkraus70@gmail.com

Scott Sibley
Director
JourneysMap
SSibley@journeysmap.com

Thomas McMullen
Regional Sales Director
Nepris
thomas@nepris.com