INTEGRITY IN CYBERSECURITY

Lesson Description: The purpose of this lesson is to focus on *one* aspect of the Cybersecurity CIA Triad - integrity. Students with cybersecurity awareness can defend themselves against bad actors by protecting their personal information on their computer devices. Students will also understand how companies protect their computer data and network.

Prerequisite Knowledge: The students are expected to have basic computer knowledge, such as browsing the internet, engaging in social media, and performing fundamental tasks on a computer.

Length of Completion: The length of the lessons is 42 minutes. It may extend into the next day.

Level of Instruction: The lesson is for high school students. It is appropriate for beginner and intermediate eleventh and twelfth-grade students. Most students have been exposed to some computer courses. They also bring Funds of Knowledge about computers from outside of the classroom.

Applicable Concepts: GenCyber Cybersecurity Concepts

Availability   Defense in Depth

Keep it simple

Confidentiality -Discuss ways to keep data safe from unauthorized users

Integrity - Discuss ways to maintain uncompromised personal and business data and computer network systems

Think Like an Adversary -be proactive, prepare for unexpected threats

Resources that are Needed: The resources needed to complete the lesson are: Mentimeter (used to create a word cloud), google classroom, google slides, the article "Information is Beautiful," 5W worksheet, and a flipchart. The assessment tool is a 2-3 sentence paragraph.

Sources:

3 Principles of infosec: The CIA triad.

   https://carbidesecure.com/resources/3-principles-of-infosec-the-cia-triad/

Arbutina & Banerjee. Cybersecurity concepts 2022.ppt.

   https://docs.google.com/presentation/d/1-ln-GMmviMWgpHFMfBA9Um71nayDO

   fCe/edit#slide=id.p2

CAPITAL ONE SAYS HACKER BREACHED ACCOUNTS OF 100 MILLION PEOPLE; EX-AMAZON EMPLOYEE ARRESTED.

   https://www.forbes.com/sites/rachelsandler/2019/07/29/capital-one-says-hacker-breached-accounts-of-100-million-people-ex-amazon-employee-arrested/?sh=116fa82241d2

Elements of cybersecurity.
   https://www.geeksforgeeks.org/elements-of-cybersecurity/

WhatIs. Com.
 https://www.techtarget.com/whatis/definition/Confidentiality-integrity-and-availability-CIA

Word cloud generator
   https://www.freewordcloudgenerator.com/generatewordcloud

World's biggest data breaches & hacks.
    https://informationisbeautiful.net/visualizations/
    worlds-biggest-data-breaches-hacks/

Accommodations Needed: Students who have difficulty writing may give their answers orally. ELL students may have teacher assistance and/or more time to read and write responses. Also, all students can listen to the audio that the websites provide.

LESSON LEARNING OUTCOMES

After completing the lessons, students will be able to:

1. Explain why integrity is important in cybersecurity.

2. Explain computer threats students face as well as corporations.

3. Explain ways to combat data breaches

LESSON DETAILS (CENTURY GOTHIC, 14 PT. WHITE, ITALIC)

Interconnection: The lesson on integrity follows the lesson on confidentiality. The activities in the prior lesson are open discussion, case study, pair share, a list of how to protect confidential information, and a reflection.

Assessment: The assessment activities used in the lesson are a written exercise and pair share discussions on the articles read.

Extension Activities: A follow-up discussion will continue the next day on the articles read on data breaches.

Differentiated Learning Opportunities: The lesson provides differentiated learning opportunities by including teaching vocabulary explicitly before reading the articles, offering reading choices, providing a graphic organizer, and audio-assisted reading.

LESSON (CENTURY GOTHIC, 14 PT. WHITE, ITALIC)

Lesson 1 Details: For lesson 1, please describe:

Warm Up: The lesson on integrity in cybersecurity will open with three essential questions, two learning objects, and a Mentimeter activity. Mentimeter is an interactive tool that allows passive students to engage in real-time learning by creating a word cloud. The word cloud will stimulate recall of prior learning.

Lesson:

Google Slides:

https://docs.google.com/presentation/d/1sSZTleA7Osv3d-4VLFsbt3FGaOrNVLx6KeyXDwH3hZ8/copy

Model Graphic Organizer:

Teacher 5 Ws Graphic Organizer

Student Graphic Organizer:

Copy of 5 Ws Graphic Organizer

This lesson is expository instructions. First, the students will receive information from the teacher via an oral presentation (google slides on Integrity in Cybersecurity). Next, the teachers will familiarize students with new computer terminology before reading from the "Information is Beautiful" website. Next, the teacher will model how to use the organizer on google docs (5Ws Graphic Organizer) and how to think about the 2-3 sentence written response required. The student will then read an article, complete the graphic organizer, and share with another student what they learned about the data breach and what the company could do to prevent future attacks. Lastly, the students will review the Ten Commandments on achieving integrity in cybersecurity.

NYS COMPUTER SCIENCE AND DIGITAL FLUENCY STANDARD

9-12.CY.1 Determine the types of personal and organizational information and digital resources that an individual may have access to that needs to be protected.

9-12.CY.2 Describe physical, digital, and behavioral safeguards that can be employed to protect the confidentiality, integrity, and accessibility of information.

9-12.IC.4 Assess personal and societal tradeoffs related to computing technologies and data privacy.