



Cybersecurity - Nova Labs

Lesson Description:

Whenever we go online—to shop, chat with our friends, or do anything else—we put ourselves at risk of cybercrime. Computer viruses can corrupt our files, hackers can steal our data, and criminals can trick us into revealing sensitive information. But luckily there are simple steps we can take to protect our digital lives.

Prerequisite Knowledge:

No prerequisite knowledge needed. Lesson will be utilized as an introduction to cybersecurity.

Length of Completion:

75 Minute Class Period.

Level of Instruction:

This lesson will be utilized in my 6th grade computer science classroom.

Applicable Concepts:

GenCyber Cybersecurity Concepts:

Availability

Defense in Depth

Confidentiality

Think Like an Adversary

Integrity

Keep it Simple

Resources that are Needed:

<https://www.youtube.com/watch?v=sdpxddDzXfE>

<https://www.pbs.org/wgbh/nova/labs/lab/cyber/research#/newuser>

- The Cybersecurity Lab is accessible on web and mobile browsers that support HTML5, including Chrome, Firefox, Safari, and Internet Explorer (version 9.0 and higher)



Accommodations Needed:

Cybersecurity 101 video will have closed captioning for hearing impaired students.

LEARNING OUTCOMES

LESSON LEARNING OUTCOMES

- Students will be able to navigate a robot through a maze using Blockly code in the Coding Challenge.
- Students will use analytical reading skills to distinguish among phishing attempts, fraudulent websites, and phone scammers in the Social Engineering Challenge.
- Students will use logical reasoning to create strong passwords in the Password-Cracking Challenge.

LESSON DETAILS

Interconnection:

This lesson will be an introductory lesson to cybersecurity.

Assessment:

Quiz - <https://www.pbs.org/wgbh/nova/labs/lab/cyber/1/1/>

Extension Activities:

Possible extension activities may include:

[Code.org – Hour of Code](#)



[Stay Safe Online](#)

[Car-Hacking](#)

Differentiated Learning Opportunities:

To differentiate instructions we have optional extensions for perhaps more advanced students like.

[Code.org – Hour of Code](#)

[Stay Safe Online](#)

[Car-Hacking](#)

LESSON

Lesson 1 Details:

Warm Up:

-Engage (10 min) – Intro activity that poses a question or calls upon prior knowledge

- **Have students watch [Cybersecurity 101](#) and discuss what they know about cybersecurity and what safety measures they currently take with their online information.**

-Explore (20 min) – Students explore a hypothesis and collect data

- **Challenge students with the question, “How aware are you of the best practices for staying safe online?” Explain to students that in the game, they will explore ways that they can stay safe online and avoid security breaches.**
- **Instruct students to create a list of tips that they would follow to avoid online scams and to create reliable passwords.**
- **Instruct students to complete all the Level 1 challenges in the game.**



-Explain (15 min) – Direct instruction and content delivery

- **Reconvene and discuss some of the best practices that they learned and whether they encountered any information that supported or contradicted the tips they compiled before the game.**
- **Present the best practices and the glossary terms that are essential to understand cybersecurity and instruct students to take notes.**

-Elaborate (45 min) – Apply content knowledge and skills to problem (guided practice)

- **Instruct students to complete the remainder of the game and to take notes on other best practices they encounter while playing the game. The Cybersecurity Lab also works well for group play, as students can collaborate in problem solving.**

-Evaluate (20 min) – Formal assessment (independent practice)

- **Students should complete the video quizzes and turn in their Lab report with confirmation of Lab completion.**
- **Educators should also use this opportunity to assess student learning, with short response discussion questions summarizing best practices, the cybersecurity stories, and the glossary terms.**

Lesson Created by:

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