Powerful Passwords

Main Goal: The main objective for this activity is to teach students how to create a safe and secure password.

Target Grade Level: 5th Grade

Target Subject: Cybersecurity

Target Unit: Networks & The Internet

Estimated Duration: 45 minutes

Materials:

Computer/smart device

Paper

Pencil

Websites: attached below

Background Knowledge: Students need to know what a password is and how they are used in computing and the Internet.

Activity Overview: This activity teaches students the importance of creating a safe and secure password. In addition, students will also make their own password using a set of guidelines. The passwords they create may be used for accessing their school computers or websites.

PRE-TEST

- What is a password? Let students do some brainstorming and come up with a student friendly definition. Then compare the class definition to the actual definition;add in any important information if needed.

- Actual:A password is **a string of characters used to verify the identity of a user during the authentication process**.

- What are some consequences of someone finding out your password?-let small groups discuss

- What should you do if someone discovers your password? Small group discussion

OBJECTIVES

Objective #1 - What is a Password?

Ask students about a combination lock and what they are used for. Relate a combination lock to an online password.

Objective #2 - Why are Passwords Important on the Internet?

Ask the class about Internet security and how they would feel if someone accessed their computer secretly.

Objective #3 - What are Some Dos and Don'ts to a Password?

Have students share with the class some rules they think should apply when making a password.

Hook:

How many of you use smart devices? (wait for show of hands, give examples of smart devices if needed)

How many of you have special locks, patterns or codes on those devices? Well have you ever thought of someone just taking that device and keeping it as their own? Well it is very possible if you didn't know! Many of us have smart devices that are dear to us, and we protect that as much as we can. It holds so much of our personal information that we want to make sure that no one can have easy access to it.

ACTIVITY INSTRUCTIONS

`Students will learn rules to a safe password as well as make their own.`

Dos and Don'ts of a Password (25 Minutes)

- As a class, have students guess if a rule to making a password is a "do" or a "don't". Rules can be found at https://curriculum.code.org/csf-19/coursec/2/#powerful-passwords2
- Individually, students then create their own password. The aim is to learn which password combinations are the hardest to guess or crack. Students can write down their favorite number, cartoon character's name, food, and a random symbol if they feel stuck.
- As students create their own passwords, start typing these into one of the following websites to see how long it would take for their passwords to be hacked. https://howsecureismypassword.net OR https://www.experte.com/password-check , enter each password and see the result.

- As you start typing the passwords, challenge the students whose passwords have been cracked to see if they could come up with a more complex password.

Review

Objective #1 - What is a Password?

Have the students go into groups and designate one student to write down their concluded answer. Ask groups what a password is.

Objective #2 - Why are Passwords Important on the Internet?

Remaining in their groups, have students give three reasons as to why passwords are important in the context of the Internet.

Objective #3 - What are Some Dos and Don'ts to a Password?

This objective is assessed from the last part of the activity with group discussion and example scenarios. This will give the students an opportunity to apply what they know.

The activity will be based on class and small group discussion with the following questions:

- Ask the students if, based on this activity, they think they should change some of their passwords? If yes, what strategies could they use to make them stronger?
- Why do you think some passwords were easier to crack than others? Which ones had the longest standing time? What did you notice about these passwords?
- Are there rules that you feel stuck with you regarding passwords and protection of your personal information? What other things could you relate to security? Where do you think you may see this in the real world?

Post-Assessment

Exit Ticket: Group or individual activity

Scenario 1
Amy forgets their phone on the bus. **IF** *someone found it and figured out their password to unlock it,* **THEN** *what could happen?*

Scenario 2
Henry writes their email address in their notebook and leaves it open while they go to the bathroom. **IF** *someone saw Henry's email address and figured out their email password,* **THEN** *what could happen?*

- You can have some more in depth discussion about the scenarios listed above.

  Examples:

- Why is it important to protect your information?
- What are real world consequences that can lead from there? -Identity theft, sharing of information to the wrong people etc.

COMPUTER SCIENCE

`Networks & The Internet`

- **Network Communication & Organization (NI.NCO):** Passwords are used to access online accounts that can potentially be linked to communicating with other people.
- **Cybersecurity (NI.C):** Students learn about passwords and what to do if their password gets discovered.

`Impacts of Computing`

- **Social Interactions (IC.SI):** Students learn the possible negative consequences of sharing their online password with others.
- **Safety, Law, & Ethics (IC.SLE):** Students learn about why it is important to have a secure password.

CROSS-DISCIPLINARY

`Common Core Language Arts Standard`

- **SL.5.1** - Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

EXTENSIONS

Lower Grade Levels

- Instead of giving an individual Dos and Don'ts assessment at the end of the activity, go over them again as a class.
- Students can use a designated set of shapes and symbols instead of writing words / numbers if they are at a pre-reading level.

Higher Grade Levels

- Have students make a "guessable" password that follows all the "don'ts" of creating a password and then put students into pairs where they guess one another's password.
- You can also collect data with the password hacker website. Plot how many tries it takes for the class passwords to get "cracked". EX: 3-5 times, 6-8 times, and have them tally that under the categories. Then plot them to see what the patterns were with the "easier" passwords vs. the more difficult ones to crack.